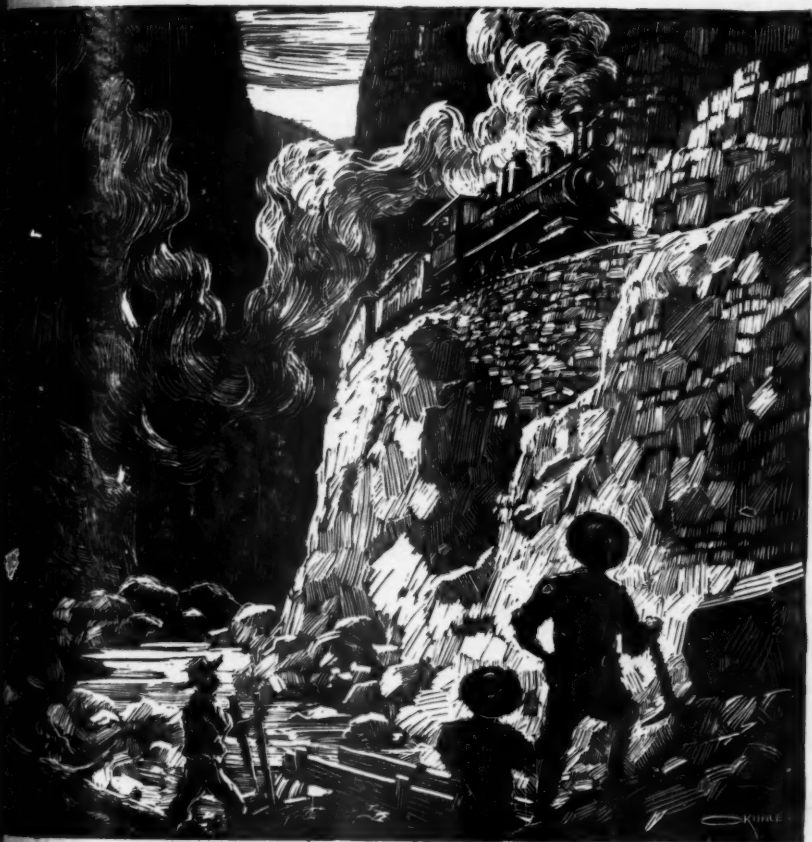


TRANSPORTATION LIBRARY

# BULLETIN

No. 73



THE RAILWAY AND LOCOMOTIVE HISTORICAL SOCIETY



# BULLETIN No. 73

---

COPYRIGHT 1948

BY THE RAILWAY & LOCOMOTIVE HISTORICAL SOCIETY, INC.

---

ISSUED BY

THE RAILWAY & LOCOMOTIVE HISTORICAL SOCIETY, INC.

BAKER LIBRARY, HARVARD BUSINESS SCHOOL

BOSTON, MASSACHUSETTS

MAY, 1948

*Price for Members \$1.00*

*Price for Non-Members \$2.00*

## Contents

The Otto Mears Passes .....	7
History of the Camden and Atlantic Railroad and Associate Railroads .....	16
Tom Thumb .....	46
A History Sketch of the Baltimore and Ohio Chicago Terminal Railroad Company and Its Predecessor Companies .....	54
The Locomotive Feed Water Heater .....	63
The Norfolk and Virginia Beach Railroad .....	69
Worth Reading .....	78
New Books .....	84
Annual Meeting .....	90



13-48  
*The Railway and Locomotive Historical Society*

*Officers and Directors*

- CHAS. E. FISHER, *President*  
20 Wilde Road, Waban (68), Mass.  
SIDNEY WITHINGTON, *Vice President*  
7 Briar Lane, New Haven, Conn.  
WARREN JACOBS, *Secretary*  
1062 Main St., Hingham, Mass.  
HAROLD S. WALKER, *Financial Secretary*  
34 Stanwood Road, Swampscott, Mass.  
GEO. P. BECKER, *Treasurer*  
53 Westmoreland Ave., Longmeadow, Mass.  
JOHN W. MERRILL, *Curator*  
148 State St., Boston, Mass.  
EDWARD HUNGERFORD, *Director*  
116 East 63rd St., New York (21), N. Y.  
W. R. FOGG, *Director*  
26 Monadnock St., Boston (25), Mass.  
DR. ARTHUR H. COLE, *Director*  
Baker Library, Harvard Business School, Boston, Mass.  
ROBERT C. SCHMID, *Director*  
266 Maitland Ave., West Englewood, N. J.  
ROGERS E. M. WHITAKER, *Director*  
3 East 47th St., New York (17), N. Y.

*Resident Directors*

- G. W. BISHOP, *European*  
12 Queen's Road, Kenilworth, Warwickshire, England  
D. L. JOSLYN, *Western*  
2164 Castro Way, Sacramento (17), Cal.

*Resident Vice-Presidents*

- WM. T. GAYNOR, *New York*  
1221-466 Lexington Ave., New York (17), N. Y.  
D. W. YUNGMEYER, *Chicago*  
5116 Dorchester Ave., Chicago (15), Ill.  
GILBERT H. KNEISS, *San Francisco*  
18 Forest Lane, Berkeley, Calif.

*Representatives*

- R. L. MARTIN, *Mid-Western*  
1509 28th St., Rock Island, Ill.  
G. M. BEST, *Pacific Coast*  
511 N. Sierra Dr., Beverly Hills, Cal.  
ROBERT R. BROWN, *Eastern Canadian*  
201 Lakeshore Rd., Pointe Claire, P. Q., Canada  
NORMAN THOMPSON, *Western Canadian*  
Box #2004, Winnipeg, Manitoba, Canada  
D. S. BARRIE, *British*  
62 Longland Dr., Totteridge, N. 20, London, England.  
CARLTON PARKER, *Exchange Manager*  
45 Warren St., Newton Centre (59), Mass.

# *The Railway and Locomotive Historical Society*

## *Chapter Officers*

### NEW YORK CHAPTER

ROBERT C. SCHMID, *Chairman*

266 Maitland Ave., West Englewood, N. J.

WILLIAM T. PHILLIPS, *Vice Chairman*

9 Wellington Road, Garden City, N. Y.

EDWARD COLGAN, *Secretary*

P. O. Box #434, Grand Central Annex, New York (17), N. Y.

CARL F. GRAVES, *Treasurer*

Apt. Van Buren 2A, Glenwood Gardens, Yonkers (2), N. Y.

### CHICAGO CHAPTER

EVERETT H. WESTON, *Chairman*

2060 Ridge Ave., Evanston, Ill.

RICHARD C. OVERTON, *Vice Chairman*

Northwestern University, School of Commerce, Evanston, Ill.

MISS VERA LARSEN, *Secretary*

c/o Alfred O'Gara Co., 134 South La Salle St., Chicago (4), Ill.

LYMAN B. HERRIN, *Treasurer*

7846 East End Ave., Chicago (49), Ill.

### PACIFIC COAST CHAPTER

GILBERT H. KNEISS, *Chairman*

18 Forest Lane, Berkeley, Cal.

G. M. BEST, *Vice Chairman*

511 N. Sierra Dr., Beverly Hills, Cal.

S. F. MERRITT, *Secretary-Treasurer*

836 Alma Ave., Oakland, Cal.

D. L. JOSLYN, *Historian*

2164 Castro Way, Sacramento (17), Cal.

### NORTHERN INDIANA CHAPTER

ALEXANDER L. H. DARRAGH, *Chairman*

1815 Bergan Ave., South Bend, Ind.

S. J. CRUMPACKER, JR., *Vice Chairman*

1121 Riverside Dr., South Bend (16), Ind.

ELMER J. DANCH, *Secretary*

119 E. Marion St., South Bend 9, Ind.

J. HAROLD KIRACOFFE, *Treasurer*

Box 19, Osceola, Indiana

# The Railway and Locomotive Historical Society, INC.

---

## COMMITTEE IN CHARGE OF PUBLICATIONS

---

CHAS. E. FISHER, *Editor*

O. KUHLER, *Art Editor*

ROBERT C. SCHMID, *Chairman, Eastern Committee*

C. B. CHANEY

C. F. GRAVES

H. E. NICHOLS

ROY L. MARTIN, *Chairman, Mid-West Committee*

M. C. POOR

D. L. JOSLYN, *Chairman, Western Committee*

G. H. KNEISS

S. F. MERRITT

ROBERT R. BROWN, *Chairman, Canadian Committee*

J. H. EDGAR

NORMAN THOMPSON

W. M. SPRIGGS

G. W. BISHOP, *Chairman European Committee*

F. ACHARD

J. W. SMITH

---

One reason why the study of railroad history is so interesting is because of the many phases that it embraces. While the vast majority are interested chiefly in the locomotives and rolling stock, there are others that find time tables, tickets, conductors checks and railroad passes of equal interest. There is no doubt that the most famous passes ever issued in this country were those of Otto Mears. It has remained for Mrs. Josie Moore Crum, one of our newer members, together with Mr. Abbott, to prepare this interesting sketch and catalogue of these passes. As Mrs. Crum has warned, none are for sale but, if you know of any, it would be nice if you would forward that information to her.

Atlantic City is truly one of the playgrounds of our eastern states. It seems difficult now to realize that south Jersey was as sparsely settled as the author relates. The seasonal traffic will always be a problem but, in the days gone by, if one wanted a fast ride for his money, it could be found on the express trains of either the "Pennsy" or the Reading. Mr. Towle has given an interesting account of how the portion came into the "Pennsy" family.

We welcome again to our columns the paper presented by Mr. Sagle on the "Tom Thumb"—the first steam locomotive tested on the Baltimore & Ohio R. R. The details of the original with the comparisons made with the models are of great value and we are glad to preserve them in our columns.

We are glad to have with us again Mr. H. T. Crittenden with his naive and interesting account of the Norfolk & Virginia Beach R. R. Two papers of unusual merit and which we believe will be of interest to our membership are those prepared by Mr. G. Murray Campbell, Vice President of the Baltimore & Ohio R. R. and Mr. John J. Alves, Jr., and read before our Chicago and New York Chapters. For the former, we are always glad to have material on the roads in our mid-west, their history has always been of interest and for the latter—well, feed water heaters are older than we thought and it is good to have this record of their development.

---

## Cover Design

We are again indebted to one of our members, Mr. Otto Kuhler for our cover design. The scene is in Colorado, it might be Gregory Guleh near Black Hawk or it might be in the South Platte River Canyon—you may take your choice and name your own locality. The goldseekers in the foreground are looking up at a narrow gauge train, making its way along an incredible ledge up an incredible grade. This could be any time between 1875 and 1900. The sketches were done in "Scratch-board" technique which is uncommon with most artists. We hope you will like the design.

Those of us who know the artist and enjoy his friendship will be interested to learn that his new address is the K-Z Ranch, Pine, Colorado. He will still serve in the capacity of a consultant to the railroads and, to those members who have corresponded with him, the mails run to Pine, Colorado and the ranch house door will be always open to our members.

## The Otto Mears Passes

By JOSIE MOORE CRUM

Not until people from all over the United States began to comment upon and try to buy the Otto Mears passes did the San Juan Country \* become aware that it was the birthplace of something particularly unique. In all railroad history no others like them have ever been issued.

Railroads, in their early years, lavished free transportation on nearly everybody—legislators, politicians, shippers, newspaper men, business men and many others. Ordinarily, passes, trip or annual, were of paper or cardboard but Mears came out with some special kinds of silver and gold. One man from Boulder County, far away from the San Juan, is known to have been given a Mears solid silver pass of 1889 for no other reason than that he was then a member of the legislature. It is likely all other members received them. A private individual could get transportation by requesting it of his congressman who procured it from the railroads. The time came when politicians and newspapers virtually controlled the carriers but a law of 1906 broke their hold by stopping the indiscriminate distribution of passes and confining their use to railroad employees. Mears, being off in an obscure corner of the world, ignored the law and did as he pleased, bestowing the paper or cardboard kind on favored persons at least as late as 1917.

In this article only the rare sorts of Mears passes, those that were particularly distinctive to him, will be considered. In the San Juan Country five kinds appeared: the buckskin, solid silver, silver watch fob (also called medallion) and silver and gold filigrees—the first three for the Silverton Railroad but the last two, after the Rio Grande Southern was built, for both railroads. Each was issued only once: the buckskin in 1888, the solid silver in 1889, the watch fob in 1890 and the filigrees in 1892.

Mears already owned the famous Rainbow Route toll road from Ouray to Silverton. His Silverton Railroad took part of the road grade which caused it to often go by the same name. The Company was organized in 1887 and built 5.3 \* miles of railroad from Silverton to Burro Bridge that year. The next year, 1888, 11.2 miles from Burro Bridge to Ironton were constructed. Only 11.2 miles, but what miles! All steep grades, curves, loops and switchbacks! And it took 5½ months to do the job with as many, at times, as 400 construction workers. To celebrate, a buckskin pass was issued. In 1889 two daily passenger trains and several freights were running to Ironton and the 1½ miles of railroad from Ironton to Albany were added. The solid silver pass practically crowed over the performance. The next year the line was prospering and the watch fob pass did the honors. Each kind was good only for the one year.

\* The San Juan Country is the territory in and around the San Juan Mountains of southwestern Colorado. The word in Spanish means Saint John and is pronounced *san boan*. Americans slur it to *san wan*.

\* These mileages are from the R. L. Kelly survey of 1892.

In 1890 and '91 Mr. Mears built the Rio Grande Southern under two projects, one working south from Ridgway via Telluride and the other north from Durango. The route went thru the most rugged mountain territory, up and down steep grades, thru canyons, over passes, across many high bridges and around curves innumerable. The railroad, about 172 miles not counting branches later added, went into operation in January of 1892. Mears must have been exceedingly pleased over his achievement and in the way of a grand celebration put out lifetime gold and silver filigree passes, good on both railroads. As it happened they were usable on the Southern only a short time. The panic of 1893 caused silver mining to collapse which brought on bankruptcy and receivership. On August 3 Mears stepped out and never again gained control of what had been his most ambitious project.

The buckskin pass is of the finest, softest buckskin, 4.05 by 2.6 inches and is the largest of the passes. In the upper left corner is a little railroad picture; at the middle and right top is, "The Silverton Railroad Company, 1888"; in the center is, "Pass," the name of the recipient and underneath, "Until December 31, 1888, unless otherwise ordered," "Subject to conditions on the other side"; in the lower left corner is the number and "Lith. John Morris Co. of Chicago"; in the middle and lower right corner is, "Otto Mears" and "President and General Manager." The "Hon. O. H. Abbott" and "Complimentary" of the pass in the picture were re-lettered but the "Otto Mears" was not and is barely distinguishable. It must have been hard to write on buckskin and the lettering easily wore off. On the back is, "Conditions—this is not transferable and may be revoked at any time. The person accepting and using it thereby assumes all risk of accident and damage to person and baggage. Not good unless signed by the holder."

#### Recipients, Numbers and Present Owners of Buckskin Passes

Hon. O. H. Abbott	A439	Morris W. Abbott (no relation)
A. P. Camp	A307	A. M. Camp (son)
C. W. Gibbs*	A495	Himself
J. M. Jardine	A39	State Historical Society
Leopold Mayer and Family	A37	Sam Mayer (son)
H. A. W. Tabor and Family	A49	State Historical Society
Cora Mears	458	Herself (Mrs. J. R. Pitcher, Jr.)
Laura Mears	456	Mrs. Cora Pitcher (sister)
Mrs. Otto Mears		Mrs. Cora Pitcher (daughter)

The solid silver or engraved-in-a-steel-die pass of 1889 is about 3.65 by 2.2 inches. In the upper left corner is a little picture of a train on a mountain railroad; at the middle and right top is, "The Silverton Railroad Company 1889"; in the center is the name of the recipient hand engraved, "Complimentary" and "Until December 31, 1889, unless otherwise ordered"; in the lower left corner is the number and in the lower right corner, "Otto Mears, President." If the number surviving is any indication these passes were the most numerous.

\*C. W. Gibbs was locating and construction engineer of the S. R. and locating engineer of the north half of the R. G. S.



Buckskin pass of 1888, actual size. Lithographed in light green and black, the green being an overall background pattern. Hand lettering, but not signature, has been retouched.



Type "A" solid silver pass of 1889. Mr. Eveland was an employee of the D&RG.

h  
s  
t  
e  
st  
w  
d  
h  
h

C.  
Dr.  
L.  
C.  
W.  
Ja  
Mi  
Go  
W.  
J.  
Joh  
M.  
R.  
L.  
Mis  
Mis  
S. S.  
H.  
P. A.  
J. V.  
Fred

kin  
just  
is 1.  
"Re  
the  
on t  
eem  
the  
of th

R  
Col.  
James  
C. W.  
Sam  
Laura  
Georg  
J. W.  
Fred

\*



Mr. Morris Abbott has discovered that some solid silver passes were made from one die and some from another. It is evident that the second batch is an imitation of the first and not as good. He has detected many small differences in the design such as on the first the "1889" is part of the die while on the second the "18" is of the die but "89" is hand engraved. The most striking difference is the placing of the maker's stamp: on the first on the back is, "Diamond Palace Denver Colorado" while on the second on the front just under the picture is a very small diamond with a D in it and underneath, "Denver Colo." Mr. Abbott has written a detailed description of the two types. The pass pictured herein is of the first type.

#### Recipients, Numbers and Present Owners of Solid Silver Passes

C. S. Benson	562	Mrs. Cora Pitcher
Dr. John Elsner	618	Morris W. Abbott
L. B. Eveland	260	Morris W. Abbott
C. W. Gibbs	359	Himself
W. I. Gifford		Himself
Jay Gould	283	Lucius Beebe
Miss Anne M. Hays	—	L. E. Dicke
Gov. James B. Grant	68	State Historical Society
W. S. Jackson, Jr.	514	Himself
J. M. Jardine	550	State Historical Society
John M. Kuykendall	563	State Historical Society
M. Liverman *	272	Edgar Levy
R. A. Lowe		Himself
L. Mayer	47	Sam Mayer (son)
Miss Cora Mears	565	Herself
Miss Laura Mears	564	Mrs. Cora Pitcher (sister)
S. S. Merry	208	James Merry (son)
H. A. W. Tabor	89	State Historical Society
P. A. Wadleigh	256	State Historical Society
J. W. Wingate	105	D. A. R. of Durango
Fred Zell	592	Edward S. Zell

The watch fob or medallion pass is also the engraved-in-a-steel-die kind and is the smallest of the passes. It is oval shaped, tho' concave just below the middle and wider at the bottom, and thru the widest part is 1.5 by 1.2 inches. The top band is of blue enamel with the lettering, "Rainbow Route" on it; in the center is a little railroad picture and at the bottom is another blue enamel band with "Silverton Railroad" on it; on the back is the name of the recipient, "Complimentary," "Until December 31, 1890," "Otto Mears, President" and the number. Some have the ring attachment at the top and some do not. The picture herein is of the Wingate pass.

#### Recipients, Numbers and Present Owners of Watch Fob Passes

Col. M. Breen	76	K. T. Logan
James F. Gardner	440	State Historical Society
C. W. Gibbs	64	Himself
Sam W. Jones	470	State Historical Society
Laura Mears	552	Mrs. Cora Pitcher (sister)
George M. Pullman	141	D. A. Rowley
J. W. Wingate	79	Mrs. W. F. Hansberger (daughter)
Fred Zell	475	Edward S. Zell (son)

\* Moses Liverman was superintendent of the S. R.

Mr. Mears ideas about passes progressed with each issue. When the buckskin came out it was nice and a novelty; then came the solid silver, nicer and a thing of beauty; to top that came the watch fob, dainty and more beautiful; and to cap the climax came the silver and gold filigrees of a grace, charm and delicate artistry unsurpassable.

Fine wire twisted into delicate designs is filigree work. The pass of that name is 2.75 by 1.5 inches overall; has a .4 to .5 inch border of filigree on which is the raised lettering, "Rio Grande Southern R. R." at the top, "Silverton R. R." at the bottom, "Pass" on the left side and "1892" on the right side; in the solid center is the name of the recipient, the number and "Otto Mears, Pres't"; on the back is "S. Spitz, Santa Fe." All were in little leather cases with a card saying, "This pass is made of Colorado silver by native workmen."

#### Recipients, Numbers and Present Owners of Silver Filigree Passes

H. B. Adsit	229	Jackson Clark
Joseph P. Airy	369	Percy Airy (grandson)
Timothy B. Blackstone	138	M. C. Poor
Mrs. Henry Cadwell	399	Herself
A. P. Camp	106	A. M. Camp (son)
C. W. Gibbs	362	Himself
W. S. Jackson	57	W. S. Jackson, Jr. (son)
Dr. and Mrs. J. E. Kinney	590	State Historical Society
John M. Kuykendall	304	State Historical Society
Mrs. Moses Liverman	42	Edgar Levy
D. H. Moffat	21	State Historical Society
F. A. Wadleigh	35	State Historical Society
Amos Walthers	415	Himself
T. H. Wigglesworth *	20	J. H. Wigglesworth (grandson)

The gold filigree is the ultimate in passes, no more beautiful than the silver, but it is solid gold. It weighs one ounce and is about 2.5 by 1.4 inches. The arrangement is the same except that the filigree part has a slightly different floral design as shown in a rubbing of the Clark pass sent to the writer by Mr. Krauser and as may be noted by the picture. The same is true of the Cora Mears pass shown in Vol. III of "Our Times" by Mark Sullivan.

#### Recipients, Numbers and Present Owners of Gold Filigree Passes

J. Clark	266	F. C. Krauser
Cora Mears	336	Herself

We have heard of others who received passes: incorporators of the railroads as John L. McNeil, M. D. Thatcher, Fred Walsen and Job A. Cooper, officials as R. M. Ridgway, J. W. Gilluly and I. J. McKelvey, officials of the D. & R. G., mining men as W. H. Croke, John J. Croke, John H. Terry, Edward W. Creel and J. H. Slattery, business men as J. J. Harris, editors as Dave Day and friends as P. H. Anderson. A man got one or several according to proximity or importance.

There is nothing known of the number of buckskin, solid silver or

\* Mr. Wigglesworth was both locating and construction engineer of the south half of the R. G. S.

watch fob passes that were issued except that they were few as they were special passes for special people. Mr. Walthers, who was Mr. Mears banker at Ridgway, says he heard that six of the gold filigrees were made. It has always been understood that Mears kept two in the family. The other, then, would have gone to the daughter Laura, later Mrs. Marshall B. Smith. Mr. A. M. Camp, whose uncle, John McNeil, was an incorporator and secretary-treasurer of both the S. R. and the R. G. S., says they were for big shippers only. In that case Edward G. Stoiber, John Porter and David Schwickheimer are good guesses for the other recipients.

A report has been current that 500 filigrees were made. Such a story is pure sensationalism. There can be no truth to it for several reasons: 1. Men who have worked with or for Mears or were his business associates have guessed from 25 to 50. Mr. A. M. Camp thinks 50 may have been ordered. As Mr. McNeil, Mr. Camp's uncle, was secretary-treasurer at the time they came out, 1892, he probably tended to the correspondence concerning them and surely made out the check that paid for them. Mr. Arthur Ridgway whose father, R. M. Ridgway, was constructor of the north half and first superintendent of the Rio Grand Southern, and who, himself was superintendent of the Silverton Railroad\* and Silverton Northern and has been 55 years in engineering capacities with the Denver and Rio Grande,\*\* says about 50 were made. Mr. F. C. Krauser, for 50 years with the D. & R. G. and R. G. S., states the same. 2. As the one jewelry store, S. Spitz of Santa Fe, produced them all, it would have been nearly physically impossible to have put out such a quantity as 500 as they are slowly and tediously hand made. 3. The cost would have been prohibitive to a railroad just starting and already badly in debt. 4. Suggestions from all the friends and business associates of Mears put together in this community as to persons who received or should have received filigree passes only add up to about 35. Granting that 15 went to persons unknown where are the other 450?

The numbering system or lack of it is the puzzle of puzzles. How passes of all kinds as buckskin 495, solid silver 618, watch fob 552, silver filigree 590 and gold filigree 336, could have such high numbers when such a few were made, is rather unexplainable. The only thing that can be said is that numbers progressed as people were given passes, regardless of kind, for a particular year. By far the greater part would have been those of cardboard or paper. It is possible the high numbers indicate something about how many passes Mears handed out in a year. One would have thought the family, incorporators or officials would have received the low numbers but that does not seem to have been the case. An exception, if it can be called such, was the one given to Mr. Wigglesworth, number 20. Mr. Abbott has discovered that no number in the appended list repeats itself, not even to the same person. For all anyone can deduce, each to-be-recipient might have as well stuck his hand in the hat (or barrel) and pulled out a number.

\*The S. R. became Silverton Railway in 1904 while Mr. Ridgway was Superintendent.

\*\*The D. & R. G. either managed or owned the R. G. S. from 1893 to 1929.

Four are the most known to have been issued to one person. Mr. Gibbs was the recipient which is understandable since he served Mears as chief engineer thru both the building of the S. R. and the R. G. S. Mr. Gifford was probably the last person upon whom a pass was bestowed, a solid silver one, soon after he came to the San Juan Country in 1906. Mr. Krauser was the man with the greatest luck. He knew Mr. Clark who was a mining man and banker of Telluride and always admired his gold pass. After Mr. Clark died his widow presented it to Mr. Krauser. We think it is a delightful story that Mears gave a solid silver pass to a baby that arrived in 1892, engraving it, "W. S. Jackson Jr." That baby is now on the Colorado Supreme Court.

While Mr. Walthers was in Santa Fe in March of 1942, an article on "Happenings of Fifty Years Ago" appeared in the *Santa Fe New Mexican*, mentioning that Mr. Spitz, a jeweler, had gotten out silver filigree passes for Otto Mears. When Mr. Walthers' daughter took his pass to the jewelry store now run by the son and daughter of S. Spitz, Miss Spitz stated that she remembered her father talking about the passes and saying they were made by native Mexicans.

The most interesting story we have heard regarding the passes is that of Mrs. Henry Cadwell, nee Florence Brumley of Dolores. As far as known she is the only woman to have received a pass in her own name on her own merits. She had been married about six months and was not quite 18 years old when, in the spring of 1892, she and her husband boarded the train at Mancos for Dolores. About half way between the two towns they felt a sudden jolt and lurch and the train stopped. On getting out they saw the engine laying on its side with steam escaping and the engineer, Billy Whistler, the fireman and the fireman's friend, a man by the name of McDonald who had been riding on the engine, all trapped in the cab. They couldn't get near on account of the steam so they carried cold water and threw on the men hoping to prevent their being scalded. By the time they could get to them the engineer was dead. The fireman was not seriously hurt but McDonald was so badly scalded that skin and fingernails were loose and hanging to his arms and hands. They carried him to a coach. Mrs. Cadwell tore up her white petticoat for bandages and did everything she could to make him comfortable. He was able to tell her his sister's name and address and ask that she send his watch to her. He died that night in Mercy Hospital in Durango. She sent the watch to the sister in Ottawa, Canada and received an answer from her. Mr. J. J. Harris of Dolores and several railroad men let Mr. Mears know about it and as a great surprise she received a silver filigree pass which is one of her most highly prized possessions and her children's greatest pride.

To summarize, we now know the whereabouts of 54 passes: 9 buckskin, 21 solid silver, 8 watch fob, 14 silver filigree and 2 gold filigree. Since collectors from all over the country are after them, it is fortunate so many have remained in their home state, 34 being in Colorado. Then 13 are in California, 3 in Connecticut, 1 in New York and 3 in Illinois.

Mr. Joe Dresback, who was from 1914 to 1929 progressively agent, auditor and general superintendent of the Silverton Railway and Silver-



Type "B" solid silver pass of 1889. Note that date is partly engraved. Both of these are shown actual size.



Silver filigree pass of 1892, No. 229, issued to H. B. Adsit. Actual size. Lettering and decoration around number have been slightly retouched to improve legibility.



Gold filigree pass of 1892, No. 266, issued to A. J. Clark.  
Actual size.



Watch fob style pass of 1890,  
actual size. This one was  
issued to J. W. Wingate, and  
is no. 79. (Photo courtesy of  
Mrs. J. H. Crum).

ton Northern, recently revealed that two engraved-in-a-steel-die or stamped gold passes about the size of the ordinary kind, were once in the office safe at Silverton. In the late nineties and early nineteen hundreds Mears was in the east and among other projects built the Chesapeake Beach Railroad from Washington to the Bay. The accomplishment called for some special passes. Of the two mentioned one had been made to a prominent man of New York and the other to a prominent man of Washington and both for some unknown reason had been returned to Mears. He brought them with him to Silverton when he came back there to live in 1907. It isn't known what became of them.

It seems odd that Mears neglected to issue a special pass for the Silverton Northern Railroad. The possible explanation is that the first and important part of the line from Silverton to Eureka was built during the immediate after effects of the panic. The Silverton Railroad, at first so prosperous, declined and was abandoned. He lost the Rio Grande Southern thru bankruptcy and sold the Chesapeake Beach. The S. N., the one he missed with a special pass tho' he used plenty of the paper and cardboard kind, lasted the longest—longer than he lived—and, of his railroads, was his and his family's best source of income.

Mr. Mears, with all his ability to visualize, then to finance and build so many roads and railroads and promote a dozen or so projects at one time, could still take time out to do the nice little thing of designing passes of unsurpassable beauty and originality. The S. R., 22 years ago, was abandoned; the Southern may soon suffer the same fate; but the passes will live on and lend glamour to the little narrow gauge railroads which occasioned their creation.

#### **SOME OBSERVATIONS ON THE "OTTO MEARS" PASSES OF 1889**

Many students of railroad history, and especially the fanatic followers of the Colorado mountain roads, are aware of the exotic passes issued by Otto Mears, builder of the Silverton, the Rio Grande Southern, and the Silverton Northern in the 1880s and 90s. So few of these passes exist, especially where they can be inspected, that not many interested persons have ever seen one, and little has been written of them. Apparently very few are owned today other than by people who were related to or connected with Mr. Mears in some way.

For 1888, Mears had the Silverton RR passes lithographed on white buckskin, showing a mountain railroad scene in the upper lefthand corner.

For 1889, he issued solid silver passes with the same scene, and these are the most numerous today, if the word "numerous" should be used at all. We will return to these presently.

In 1890 the passes appeared in the form of a watch fob, with a different scene, and these are very rare today.

All of the foregoing were issued by the Silverton, but in 1892 (none are known for 1891) appeared the gem of them all—the silver filigree

---

Note—The author, whose address is Durango, Colorado, will appreciate information concerning other passes. But please, dear collector, do not ask for addresses of any of the owners above named for none of the passes are for sale.



pass, bearing the names of the Silverton and the Rio Grande Southern, which had been built in the meantime. There were a very few of these made in gold, and they are now in the ultra-exclusive category.

So much for the over-all picture, and we will revert to the 1889 solid silver passes. Upon acquiring two of them, I was immediately struck by what apparently has not been generally known,—that there were two types, made from different dies, which were cut by different engravers.

The general appearance of the two types, and the wording, are identical, but there are several major and numerous minor differences.

TYPE A is apparently the original die. The engraving is accurate, bold and clear, especially as to the scene. The year 1889 is entirely a part of the die. Mr. Mears signature and title are incused or sunken, while all other matter is in relief. The name H. PAUL appears at the edge of the scene. The reverse shows the name and diamond trade-mark of the maker. A close examination of the scene shows that the train smoke is in puffs, that the locomotive has an indeterminable number of wheels, the tender apparently has four, and each of the four coaches seems to have four instead of the orthodox number.

TYPE B differs from Type A mainly in that the signature is in relief, and the date is partly in the die and partly hand engraved. That is, the 18 is part of the die, but the 89 is hand engraved, as is also the 89 in the expiration date. The maker's name does not appear on the reverse, but on the obverse, just below the scenic vignette is a very small D in a diamond, followed by the words DENVER, COLO. The smoke is a smooth, trailing stream. The locomotive is a 4-4-0, the tender has six, and each of the coaches 8 wheels.

As they were made so many years ago that it seems unlikely that the real reason will now be known, we can only suppose that the original die broke (as numismatists will tell us they do) and another engraver had to be called in to make a new one. What prevented the original engraver from making another? Perhaps a rich silver strike carried him off to the hills.

No plausible reasons present themselves why the handling of the signature was changed, and it must be pointless to try to guess at this late date. As to the change in the manner of showing the year 1889, there seems to be only the possibility that Mr. Mears, as an afterthought upon learning of the need for a new die, decided to make the change to permit the use of the same die in some later year. If it was ever so used, no such passes have turned up as yet.

Mrs. Josie Moore Crum of Durango, who has undoubtedly made more of a study of the Mears passes than anybody else, has pointed out in her chapter about them in "Pioneers of the San Juan Country," that the Mears system of numbering his passes has baffled all comers. It must be true that only a small number were issued in any one year and in the aggregate, yet she has located and catalogued passes bearing numbers above No. 600. The Silverton RR was not completed until 1889, yet the numbers for 1888 run over 500, which seems like a lot for a road only about five miles long, even if all passes, including cards, were numbered consecutively as issued.



Some of the people nearest to him received high numbered passes, some notables got high and some low numbers. It seems most likely that he had no real system at all. It is of no importance, but very tantalizing.

I am indebted to Mrs. Crum for much of the information regarding the Mears passes, but have examined eight of them, of three different years, myself.

MORRIS W. ABBOTT

---

The Society is grateful to Mr. Morris W. Abbott, not only for his additional contribution on the Mears passes, but for his knowledge, interest and enthusiasm on this subject which led him to have the illustrations made at his own expense that are used in connection with this article.

Finally, just as this article was going to press, Mr. Abbott announced the discovery of the pass issued in favor of Miss Anna M. Hays, owned by Mr. L. E. Dicke. This is another of the solid silver type B passes, but, the owner states that the figures 89 have not been added after 18, that there is no expiration date and the pass is not numbered. This is the first of its kind to have been discovered and, it would seem as though there was carelessness on the part of someone.

# History of the Camden and Atlantic Railroad and Associated Railroads

1852-1897

By CHARLES L. TOWLE

## FOREWORD

Philadelphia is a hot, humid, and uncomfortable city during the summer months. Only sixty miles away on the Jersey Coast, cool sea breezes blow night and day and fine sand beaches invite the bather. Previous to the construction of the Camden and Atlantic R. R., few people could take advantage of the proximity of this summer paradise as it was reached only by a long and tiresome stage coach trip.

In the early 1850's an enterprising group of South Jersey financiers considered this fact, together with the additional considerations that the population of Philadelphia was increasing at a rapid rate and that scant facilities were available to inhabitants of the Quaker City to enjoy a summer holiday. Caught in the current railroad building fever, they decided that since South Jersey presented few construction difficulties and land was available at low cost, a railroad could be built from Camden to the seashore at Absecon Inlet with a moderate expenditure and with vast possibilities for summer passenger traffic.

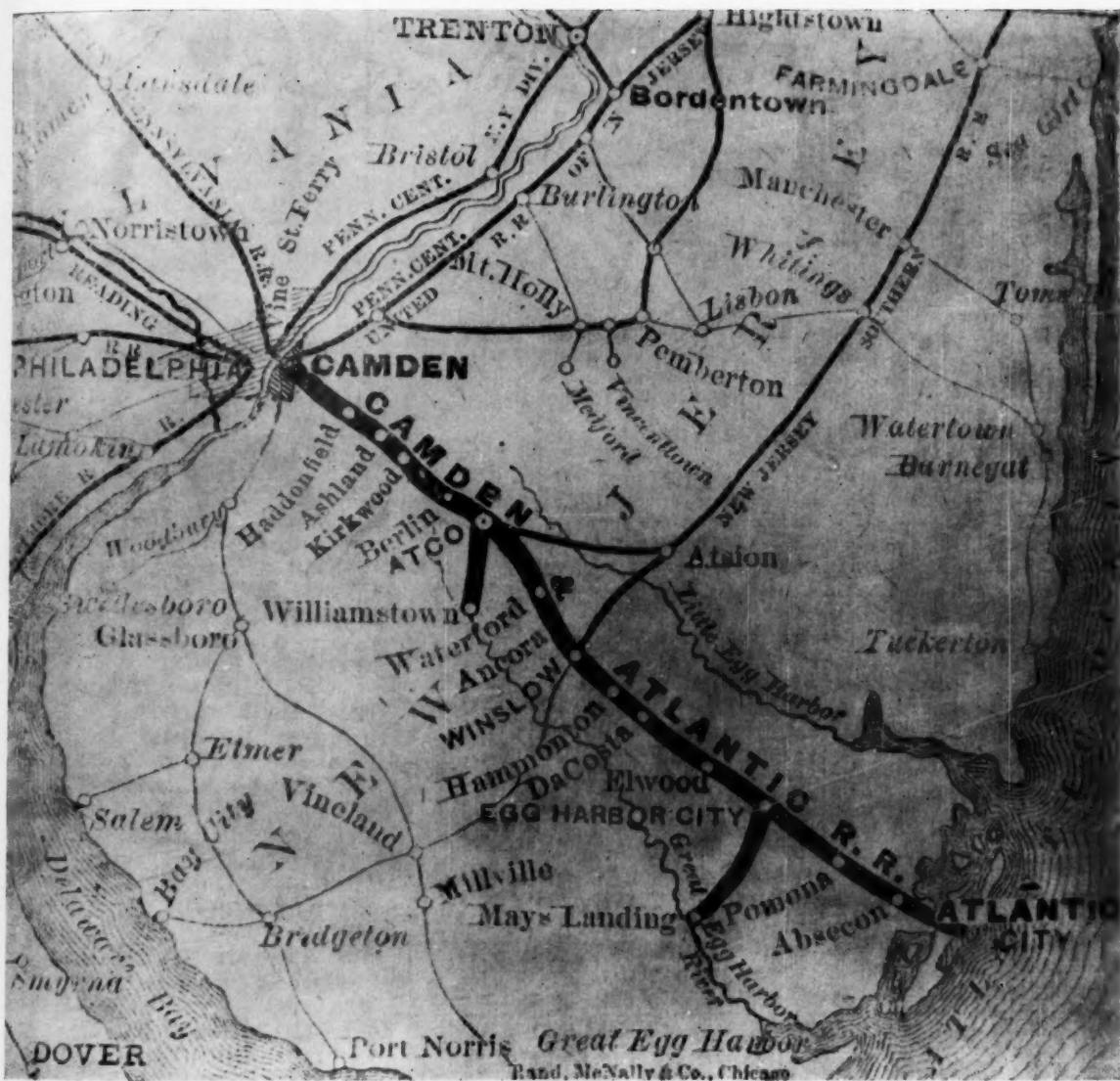
A charter was obtained from the legislature and construction of the Camden and Atlantic Railroad completed in 1854, despite considerable financial difficulty. The results of the first years of operation of the railroad quickly showed the fundamental weaknesses in the successful conduct of the Camden and Atlantic R. R., which have never been solved and continue to the present day, to make profitable operation of the Atlantic City road almost impossible.

Lack of originating freight traffic in the territory from Collingswood to Atlantic City results in very low freight revenue, the only traffic being derived from the Camden territory and a small amount of supplies for points along the road. Although a considerable agricultural traffic was built up by the railroad at one time, it has long since been lost to truck competition.

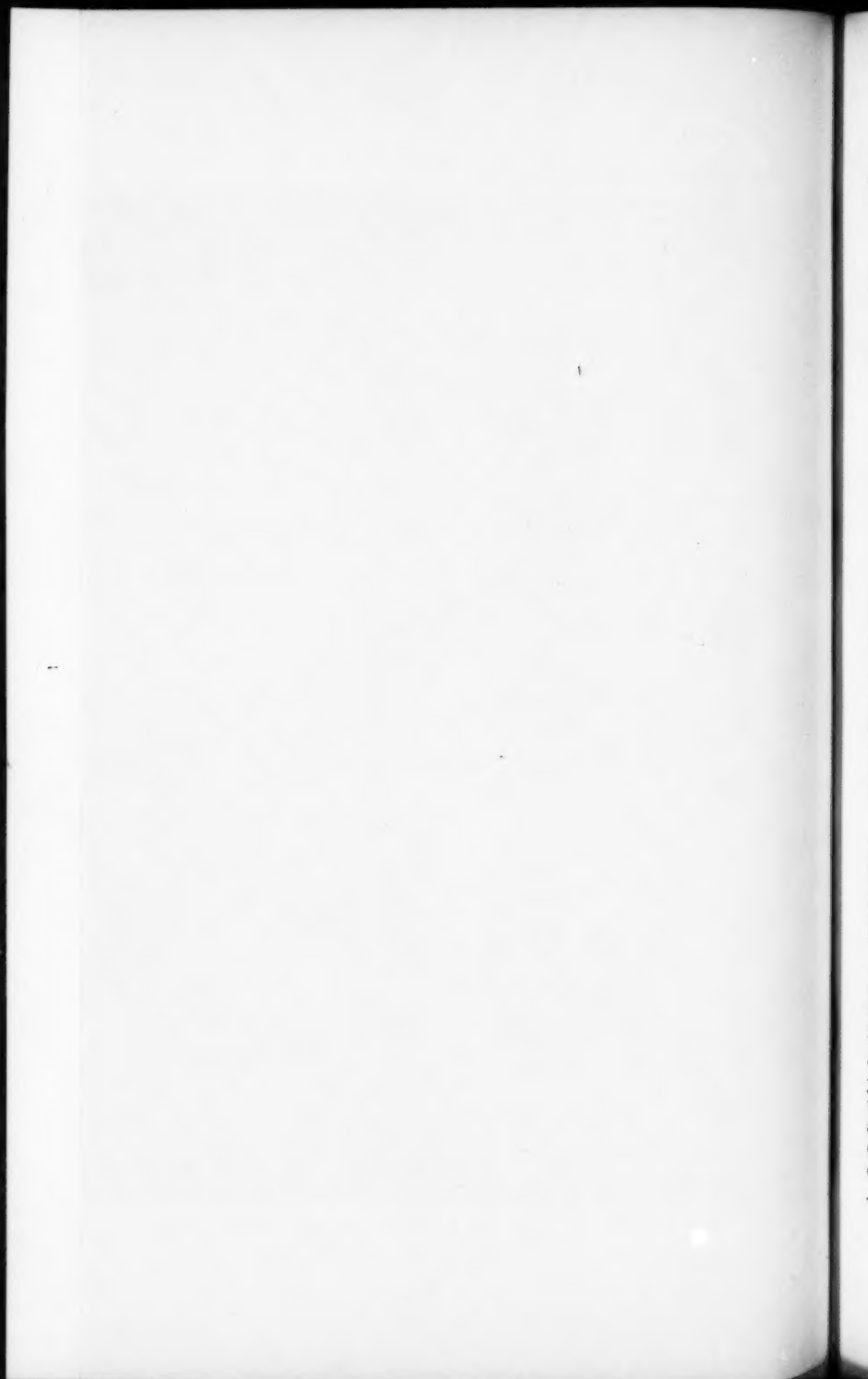
Heavy passenger revenues during July and August must support operation of the railroad for the entire year, as passenger traffic during the balance of the year is light. Fast and frequent passenger service must be maintained throughout the year to meet bus and automobile competition, although such service is not warranted by the traffic.

The great number of locomotives and passenger cars required for peak summer business result in rentals of equipment from foreign roads, and excessive deadheading of available equipment to meet peak loads, with consequent excessively high operating costs. Similarly, many extra crews were needed for summer business, with considerable expense involved due to necessary deadheading and overtime.

All these factors probably were an important consideration in the merger of the Camden and Atlantic with the West Jersey R. R. in 1897.



Camden & Atlantic R. R. Map of 1874.



The Pennsylvania Railroad, operators of the West Jersey and Seashore, were in a much better position to profitably conduct the seashore roads as they had the necessary extra equipment and men to cover peak periods without incurring greatly increased expense.

This history is based principally on Annual Reports of the Camden and Atlantic R. R. from 1870 to 1897, with some details obtained from various railroad reports and correspondence. The writer wishes to express his gratitude to Mr. E. F. Paige and Mr. Allan Stewart of the Pennsylvania-Reading Seashore Lines for their valuable assistance and to the Baldwin Locomotive Works for locomotive rosters and photographs.

## HISTORY OF THE CAMDEN AND ATLANTIC RAILROAD

On March 19, 1852 the Camden and Atlantic Railroad Company was incorporated by the State of New Jersey with all rights to survey, lay out, and construct a railroad from the city of Camden, or from some point within one mile of said city, to run through the counties of Camden and Atlantic to the sea, at or near Absecon Inlet, in the county of Atlantic.

The incorporators of the Camden and Atlantic were listed as John W. Mickle, Abraham Browning, Samuel Richards, Joseph Porter, Andrew K. Hay, John H. Coffin, John Stranger, Jesse Richards, Thomas H. Richards, Edmund Taylor, Joseph Thompson, Robert B. Risley, Enoch Doughty, and Jonathan Pitney.

The act of incorporation provided for capital stock of \$500,000, with liberty to increase same to \$1,500,000, to be divided into shares of \$50. The incorporators were empowered to receive subscription for sale of capital stock. Nine directors were to be chosen by the stockholders, a majority of whom were to be citizens and residents of New Jersey. The Board of Directors were to elect a president who was to be a resident of New Jersey also.

The State specified that the railroad was not to charge more than six cents per ton per mile for transportation of property, or more than four cents per mile for carrying each passenger on said railway. The C. & A. was given the power to purchase and hold real estate at termini or any intermediate depot of their railway, not exceeding five acres at each place, and was empowered to build upon same buildings as necessary.

As soon as the road was finished a statement of the cost of the railroad, including all expenses and purchases, was to be filed. The road was thereafter, annually, to furnish such statement to the state legislature until the net income of the road amounted to 7% upon its cost, when the railroad was to pay to the treasurer of the State a tax of  $\frac{1}{2}\%$  on cost of the road.\* This tax was to be paid annually on Jan. 1st each year, provided that no other tax or impost was levied or assessed upon the railroad. The company was also empowered to borrow such money as might be necessary to build, construct, or repair the road or furnish equipment or machinery to operate the road, at a rate of interest not exceeding 7 per cent.

---

\* This probably means  $\frac{3}{4}$  of one percent.

An unusual clause in the charter provided that at any time after 50 years after the completion of the railroad the legislature of the State might take an appraisal of the value of said road by a committee of six members, three appointed by the State and three by the company. After such appraisal, the state should have the privilege for three years of taking the railroad upon payment to the company of the sum agreed upon by the committee. The president of the railroad, when requested by the legislature, was to submit a full and fair statement of the cost of the road and of all receipts and disbursements of said company.

The legislature was given the right to subscribe to the stock of said company to the amount of \$100,000 at any time before or within twelve months after completion of the railroad. The Governor, Chancellor, Justice of the Supreme Court, Judges of the Court of Errors, and members or officers of both houses of legislature of the State during session, were given the right to travel free of charge on said railroad while traveling for purpose of discharging duties of their offices.

A time clause was inserted in the charter providing that if the railroad was not completed within ten years after August 1, 1853, all provisions of the charter were void.

Several interesting amendments were made to the original charter. The first on March 10, 1853 stated that the president of the Camden and Atlantic was not required to be a resident of New Jersey. On March 24, 1855 an amendment increased the Board of Directors from nine to thirteen members, a majority of whom were to constitute a quorum for the transaction of business.

On February 7, 1856 the C. & A. R. R. was authorized to issue additional capital stock for \$1,000,000 in shares of \$50. The stock was to be preferred and the holders thereof entitled to receive a dividend not to exceed 7% per annum, before any dividend was to be set apart or paid on other stock of the company. Said preferred stock could be sold to creditors of the company in payment of debts of said company.

The Camden and Atlantic R. R. was given the right on March 20, 1857 to locate, survey, and construct a branch railroad from any point on said company's railroad between Camden and Haddonfield, to any point on the Delaware River between Kaighn's Point and the city of Gloucester. Unless this branch was constructed within 6 years from date such power and privilege shall cease. No action was ever taken under this charter by the Camden & Atlantic R. R.

On March 18, 1858 the Camden and Atlantic was empowered to locate and construct a branch railroad from any point on the main line between Cooper's Point in the city of Camden and Haddonfield, to any point on the River Delaware within the bounds of the City of Camden. This power was also to cease unless construction was undertaken within 6 years of the date granted. Under this charter the Camden and Atlantic constructed a spur track paralleling the Delaware River from Cooper's Point south to Federal St. Camden. This branch served a number of industries and is still in service as a valuable industrial spur.

The South Atlantic City Branch was constructed and eventually extended to Longport under the charter of March 8, 1861 which gave

the C. & A. the right to survey, locate, and construct a branch railroad from, at, or near its terminus in the City of Atlantic down and along Absecon beach to any point at or near Great Egg Harbor Inlet. To secure funds therefor the Camden and Atlantic was given the power to borrow sums of money not exceeding \$150,000 and to secure repayment thereof by bonds of the Company and a mortgage of said branch at a rate of interest not exceeding 7 per cent.

On March 8, 1861 the Camden and Atlantic R. R. was empowered to establish such ferries, and to build & maintain the boats, wharves, slips, etc. necessary for such purpose; as were necessary for proper working of the railroad: It was also given the right to subscribe to the stock of any ferry to be run in connection with the railroad at any point and to build wharves at any place that may be necessary for the use and proper working of the railroad. Under the terms of this charter, the Cooper's Point and Philadelphia Ferry Co. was purchased and operated as the Philadelphia ferry connection to the railroad at Camden. This ferry company had been independently chartered on February 20, 1856 and had been operated as an independent ferry service until 1871, when it was purchased by the railroad and subsequently operated under the charter of 1861.

The section of the original charter which provided that the railroad company could have, hold, or purchase five acres of ground at its terminus or intermediate depots was repealed on February 19, 1873 and unlimited holdings at any point were thereafter authorized.

The first annual report of the Board of Directors of the Camden and Atlantic R. R. was not made until the year 1870, but fortunately for purposes of recording the history of the road during its early years a summary of its construction and early operation was made in the first annual report.

Before the construction of the railroad, the entire business between Absecon and Camden was handled by a daily two-horse stage and a few oyster wagons. With the exception of the glass works at Waterford and Winslow and a tavern and farmhouse at Winslow, there was not a house to be seen from Long-a-coming (Berlin), 16 miles out of Camden, until the coast was reached. In the year 1852 the entire settlement on Absecon Island consisted of but four houses. The following year the upper portion of the Island was laid out as a town and several hotels, boarding-houses, and cottages were erected. In 1854 the town was incorporated as Atlantic City and with the opening of the railroad a steady increase in population was commenced. In the year 1870 the town contained 1025 residents, 42 hotels, 50 boarding-houses, and 278 dwellings; with accommodations for 10,000 visitors. The streets were broad and well graveled. Along the beach a boardwalk one and one-half miles long, and 10 feet wide, extended. The 1870 annual report claimed that the bathing was safe and equal to any on the coast, and the atmosphere clearer and much less moist than any known sea side resort.

Surveys were commenced for the railroad during 1852 and first contracts for construction were let that fall. The railroad was located for the greater portion of its length along the watershed dividing the waters of Great Egg Harbor River from those of Little Egg Harbor



River, so no stream or swamp of any magnitude was encountered. None of the bridges along the road exceeded 24 feet span, except the bridge over the Channel separating Absecon Island from the salt meadows. This bridge of pile construction was 531 feet long and had two forty foot openings for the passage of vessels. As the country offered no building materials, the bridges and culverts were constructed of wood. By 1870, however, most of the abutments had been replaced by stone.

The roadbed of sand and small gravel was adapted as best for preservation of ties and for maintaining a smooth and permanent track. The curves laid out were very easy, not exceeding 1 degree 20 minutes, and the maximum gradient was 28.59 feet to the mile. From Winslow to Absecon, a distance of  $25\frac{1}{4}$  miles, the road was straight. The road adopted a U or bridge pattern rail weighing 62 pounds per yard, with joints laid opposite, and rails fastened by a five foot splice plate. The iron of this rail, manufactured by Reeves, Buck and Company, proved to be of superior quality and no renewals were necessary until 1866; since when  $12\frac{1}{4}$  miles have been relaid with 58 pound rail of the Erie pattern, chosen because of its lesser cost and easier availability. This rail was laid with the Reeves' patent joint which has proven very successful.

At first it was considered necessary to construct a bank across the salt meadows, between Absecon and Atlantic City, and to drive protective piles, in order to raise the track above the tides. But later experience showed that the cheapest and best plan was to lay the track directly on the meadows and allow the storm tides to flow over it without obstruction.

As it was assumed that the necessary land could be obtained at a reasonable price, the work was contracted to be finished July 1, 1853. But as this anticipation was not realized, it was found necessary to resort to the provisions of the charter and have commissioners appointed to value the land. Due to this slow process the last piece of land was not obtained until April 15, 1854 and the road was not opened for business until July 4, 1854. Due to this delay and the washing of the fill across the meadows by a severe storm in the spring of 1854, the contractor claimed and was allowed \$110,000 extra compensation.

As the road passed through an almost uninhabited country for two-thirds of its length, it was difficult to find investors willing to risk such a gamble. Due to these financial troubles the Board of Directors in March, 1853, authorized the issue of \$500,000 7% first mortgage bonds payable on December 1, 1872. In July 1854 a like amount of 7% second mortgage bonds, payable in 1879, were issued.

The small amount of stock sold, and the difficult money market during 1854 and 1855 prevented the sale of bonds, brought the company into dire financial straits. In February 1855 the amount of capital stock paid in was only \$240,000, while the floating debt was \$921,000. To fund this debt \$750,000 of third mortgage bonds were issued, due in 1880. Few of these bonds were disposed of and in February 1856 a supplement to the charter was obtained allowing issue of \$1,500,000 worth of preferred stock. In 1860 an agreement was made with the creditors by which their claims were settled in preferred stock. The loss sustained by the company in sale of its bonds, in procuring money to build and maintain the road, and in settlement with creditors amounted to \$486,000.



# CAMDEN & ATLANTIC RAILWAY.

R. FRAZER, President, Philadelphia, Penn.

G. W. N. CUSTIS, Gen. Supt., Camden, N. J.

H. WHITEMAN, Sec. & Treas., Phila.

[July 4.

Phila. to Atlantic.

Atlantic to Phila.

Acc. Mail.		Mls.	STATIONS.		Mls.	Acc. Mail.	
P. M.	A. M.		LEAVE	ARRIVE		A. M.	P. M.
4 15	7 30	0	Philadelphia..	60		9 05	7 35
			(Steam Ferry to)				
4 30	7 45	1	Cooper's Point	59		8 53	7 20
4 47	8 05	8	... Haddonfield ...	53		8 35	7 02
5 06	8 19	13	... White Horse ..	48		8 19	6 43
5 19	8 37	18	..... Berlin .....	43		8 04	6 33
5 27	8 46	21	..... Atco.....	40		7 56	6 25
5 39	8 58	24	... Waterford ...	37		7 42	6 14
5 55	9 12	28	.... Winslow ....	33		7 30	5 55
6 04	9 21	31	... Hammonton...	30		7 21	5 48
6 11	9 28	33	..... Da Costa.....	28		7 14	5 41
6 26	9 41	38	..... Ellwood <sup>1</sup> ....	23		7 01	5 28
6 38	9 53	42	..... Egg Harbor <sup>2</sup> ....	19		6 48	5 16
7 09	10 24	53	..... Absecon <sup>3</sup> ....	7		6 18	4 46
7 29	10 44	60	..... Atlantic....	0		5 54	4 22
P. M.	A. M.		ARRIVE	LEAVE		A. M.	P. M.

**Extra Trains.**--*Express Train* leaves Cooper's Point for Atlantic at 2 15 p. m.

Leave Atlantic for Cooper's Point at 7 13 a. m.

*Excursion Train* leaves Cooper's Point for Atlantic at 6 30 a. m. *Returning*, leaves Atlantic at 5 18 p. m.

<sup>1</sup> Stage daily to Tuckerton, Manahawkin, Barneytown, Wintown, Forked River, Cedar Creek, &c.

<sup>2</sup> Stage daily to May's Landing and Tuckahoe: tri-daily to Cape May and Court-house.

<sup>3</sup> Stage daily to Leed's Point, Somer's Point, Beesley's Point, English's Creek, &c.

Ra

fo  
w  
m  
§

1

e  
f  
e  
e  
a  
l

v  
l  
e  
t

The total cost of building and equipping the Camden and Atlantic Railroad was \$1,274,030 divided as follows—

Grading, Bridges, and Culverts .....	\$208,494
Extra compensation to contractor for delay .....	110,488
Track Laying .....	22,289
Engineering .....	28,000
Land damages and real estate .....	146,942
Iron rails .....	391,120
Switches .....	1,635
Water stations .....	2,894
Station houses .....	16,332
Machine shops .....	10,078
Wharf at Cooper's Point .....	23,014
Sills (Ties) .....	84,456
Rivets .....	5,446
Spikes .....	11,762
Meadow piling .....	7,189
Turn-tables .....	2,215
Lumber, Iron, Work trains .....	52,316
Telegraph .....	12,668
Locomotives .....	51,857
Passenger cars .....	27,544
Freight cars .....	57,381

In the period from 1866 to 1870 considerable expenditure was made for renewals and replacements. For renewals \$75,616 was spent on roadway, \$10,140 for engines, and \$7,766 for freight cars. Increased equipment during this period called for an expenditure of \$89,596 for engines, \$75,379 for passenger cars, and \$16,153 for freight cars.

The capital structure of the Camden and Atlantic as of January 1, 1871 consisted of the following—

Common stock—7542 shares at \$50 .....	\$377,100
Preferred stock—15,054 shares at \$50 .....	752,700
7% First Mortgage bonds .....	490,000
7% Second Mortgage bonds .....	500,000
Other bonds and mortgages .....	75,080

The fundamental weakness in the operation of this railroad, which continues until the present day, was quickly evident. The railroad was forced to maintain itself for the entire year on its July and August receipts, as the income for the balance of the year did not even meet current expenses. To offset this situation the directors of the Camden and Atlantic adopted a policy of encouraging settlement and development along the line, which met with moderate success.

By 1870 the older towns along the road were enlarged and improved, while new towns rapidly developed out of the wilderness. Near White Horse (Kirkwood) a paint and color factory was erected and marl pits opened. The villages of Atco, Waterford, and Winslow were rapidly growing in importance and size. Some years after the opening of the railroad, the settlement of Hammonton was commenced, principally by families from New England, and by 1870 had a population of 2000. At the same time the Germans laid out and settled Egg Harbor City, ten miles from the coast, and by 1870 the town had 2000 inhabitants and several factories. The village of Elwood, 6 miles east of Hammonton,

through the erection of several paper mills and a shoe factory assumed considerable importance. The land along the railroad was found well fitted for farming, trucking, and fruit raising. Great quantities of fruit were annually shipped to Philadelphia and New York markets.

In order to improve business the company inaugurated a system of carrying excursions, in which the fare paid decreases by a regular scale as the number of persons on any particular excursion increases. This was found highly remunerative and the practice was adopted by other railroads. The number of persons annually patronizing these excursions were about 35,000 and for their accomodation a large and handsome building was erected at Atlantic City, at a cost of \$30,000.

During 1870 to provide for accomodation of engines of local trains, an engine house and turntable was erected at Haddonfield and an engine house and water house at Hammonton.

In order to improve its connections with Philadelphia, the Camden and Atlantic R. R. purchased the Cooper's Point and Philadelphia Ferry Co., with all boats and property, for \$82,800; and payment was made by preferred stock of the C. & A. at par. The ferry was subsequently operated by the railroad under a special charter obtained from the legislature.

During 1871 and 1872, 24½ miles of road were laid with T rail of 56 lb. weight. Receipts for the year, after deducting expenses, were sufficient to have paid a dividend of 9%, but the balance was spent for renewals, construction, and addition to rolling stock.

During the summer season of 1872, there was erected two miles west of Absecon, a water tank and pump for the purpose of supplying the citizens of Atlantic City with pure spring water carried over in tanks built for the purpose upon flat cars. This service proved of much value to those not having a supply in cisterns. At the same time to provide protection for locomotives at Atlantic City an engine house was erected accomodating four engines.

The summer of 1872 found excessively heavy trains being run during the bathing season, making it necessary almost every day for two engines to be used on the excursion trains. Due to shortage of cars it was necessary to return cars from the excursion train to Camden for the evening trains to Atlantic, and then at night to make a return trip from Camden to provide cars for trains bound to Camden the following morning. This deadheading materially lessened receipts per mile run. Thus in the very early days of the Camden and Atlantic an operating headache arose which has plagued the executives of the seashore railroads right up to the present day.

The first mortgage bonds which were payable January 1, 1873 were extended for 20 years and future interest made payable in gold. A dividend of 3½% was paid on the preferred stock during 1872.

The following year found the presidency of the Camden and Atlantic assumed by Andrew Hay, replacing Robert Frazer. Notwithstanding the general depression in all kinds of trade, the business of the road was highly satisfactory, with increase in receipts over previous year of \$41,960. A dividend of 3½% was paid on the preferred stock.

In 1874 the company for the first time in its history was free of floating debt. This was accomplished without impairing the operations of the road or stinting necessary repairs and replacements. All defective rails were replaced, 700 tons of new rail laid, and 20,000 new ties, principally white oak, were installed. The favorable financial situation was reflected in a 7% dividend on preferred stock and a 3½% dividend on the common stock, the first payment to holders of the original stock issue.

A new office building was erected at the Camden terminal, housing the operating staff of the railroad. The results of a continued rail renewal program found all but 25 miles of the line relaid with the T pattern rail.

In 1875, due to the severe illness of Andrew Hay, William Massey was appointed acting president. The directors voted to subscribe \$5,200 to the stock of the Centennial Exposition. A 7% dividend was paid on both the preferred and common stock of the road.

Many improvements were made in maintenance during the year with 1106 tons of new iron rail laid, and 207 tons of rerolled and 885 tons of recut old rail installed in track. Steel frogs were placed in track replacing the old iron frogs. The track over the meadows between Absecon and Atlantic City was thoroughly overhauled and raised out of the reach of ordinary tides. Work was commenced to ballast the road with gravel, eliminating the dust nuisance of the original sand ballast.

In Atlantic City, four horse cars and 16 mules were purchased to provide trolley service on Atlantic Ave. This evidently resulted in confusion as delays to regular trains of from 30 minutes to an hour were reported. The Superintendent recommended that an additional track be provided for these cars for by using the main track they made operation of regular trains on Atlantic Ave., from South Carolina Ave. to Maryland Ave. almost impossible.

During 1876 John Lucas was elected president of the Camden and Atlantic R. R. replacing Andrew K. Hay, who was forced to retire due to continued illness. Anticipating a greatly increased business during the year of the Centennial Exposition, the road purchased eight new passenger cars and a new locomotive. The results were very disappointing as evidently most of the out-of-town visitors preferred to spend their available time at the Exposition. During the year a new terminal depot, wharf, and pavilion was erected at Atlantic City and the old depot converted into a stable and storehouse.

In order to provide facilities for picnics, sixty acres of land at Kirkwood Lake were purchased and a pavilion and other facilities erected. This park was to provide a convenient excursion point close to Camden and Philadelphia.

The continued excellent operating results resulted in an 8% dividend payment on both common and preferred stock.

The following year Charles D. Freeman was elected president, with John Lucas continuing his membership on the board of directors. Due to the current business depression the number of summer travelers decreased considerably, the loss of revenue resulting in dividend payments being decreased to 2% on common and preferred stock.

In an effort to regain lost business, freight rates were reduced on July 1 and the passengers fares on September 1. During the year 62 excursions were operated to the new picnic grounds at Kirkwood Lake and 13,275 excursionists were carried to this point.

The year 1878 found the greatest number of passengers being carried to Atlantic City since the opening of the railroad, but due to the low fares of \$1.00 for the one-way trip and \$1.50 for the round-trip, the total receipts were less than the previous year, by an amount of \$78,000. Freight receipts were off due to lower rates, lowered from time to time to meet the demand of shippers. The failure of the fruit crop was almost total in 1878 thus further reducing traffic. However, considerable freight tonnage was carried due to the construction of the Philadelphia and Atlantic City Railroad. For the first time in several years the Camden and Atlantic failed to pay any dividend on its stock.

Semaphore signals to govern the movement of trains were erected at all telegraph stations during the year and proved of great value in controlling train movements.

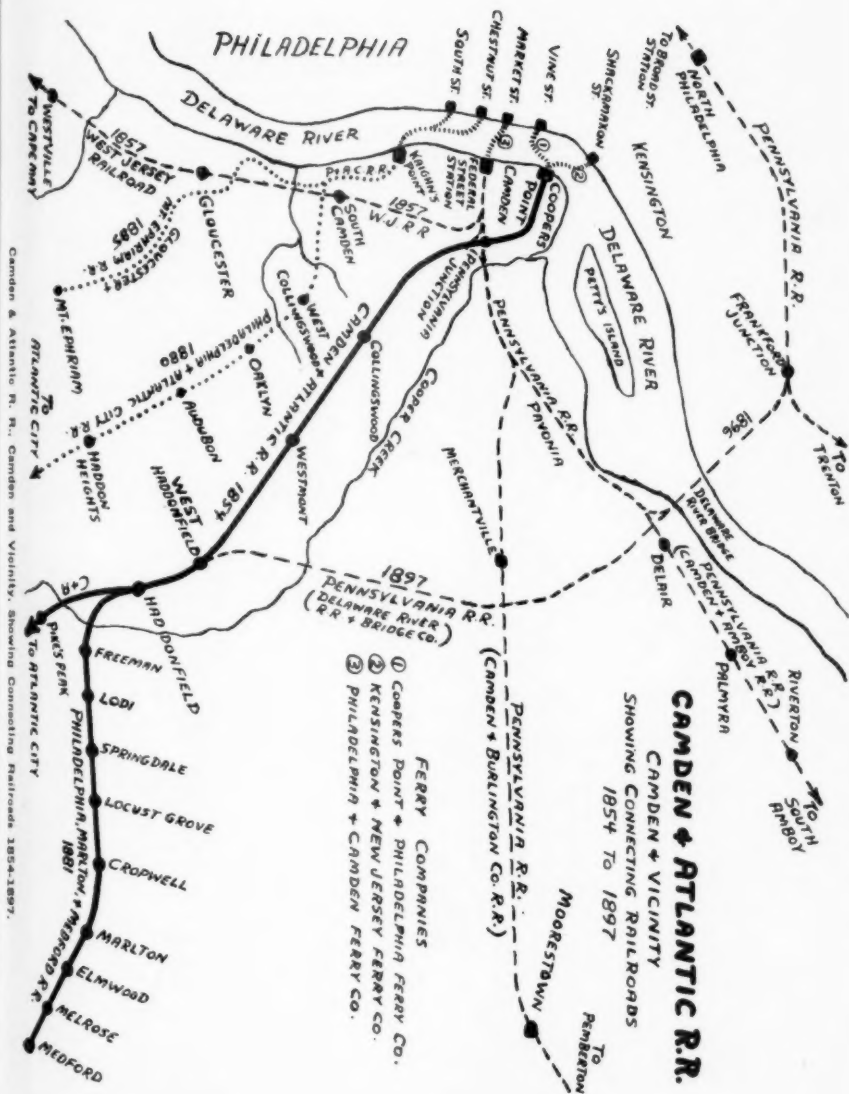
For the first time a daily express train commenced all year operation to Atlantic City during 1879. Passenger business continued to increase and trains were moved at the highest rate of speed yet achieved. The numerous fast trains moving in different directions at the same time upon a single track road required unceasing watchfulness to prevent collision. This heavy traffic made it necessary to lay additional sidings at various points along the road, thus affording a double track over a large portion of the route. During the year grading was completed, ties laid, and 60 lb. steel rail purchased for a double track 7 miles from Camden to Had-donfield.

The low rates of 1878 were maintained but receipts increased due to greater service rendered by more numerous and rapid trains both for passenger travel and freightage. The second mortgage bonds maturing October 1, 1879 and bearing 7% interest were reduced to \$497,000 and a new mortgage was executed for that amount with 6% interest, reducing annual interest \$4,970. A 3½% dividend was paid on preferred stock.

500 tons of new 60 lb. steel rail were laid in 1879 and the last of the original U rail was removed from the line. Twenty safety switches were installed in main track replacing the old stub switches.

The year 1880 found the Camden and Atlantic competing against two other railroads for the Atlantic City business, namely the Philadelphia and Atlantic City R. R., built as a narrow gauge line, and the West Jersey and Atlantic R. R., connecting with the West Jersey R. R. from Camden at the town of Newfield. It was expected that these two competing roads between the same terminals would reduce business of the C. & A., but contrary to expectations the gross receipts increased \$3365.

At Camden a new ferry building with two slips and a new depot with two train sheds were constructed. The control of the majority of the stock of the Kensington and New Jersey Ferry Company was obtained and boats of that company started operation from Shackamaxon St., Philadelphia to the Camden and Atlantic ferry slips at Camden. Cost of stock was \$9,283.



were

A \$  
del  
fer

wit  
alon  
roa  
com  
imp  
of  
to

ere  
out  
red  
wer  
was

eur  
A.  
Per  
sec  
dov  
eve  
Ne

ing  
par  
\$35  
me  
yea  
del

sta  
ere  
pay

cor  
of  
car  
ha



The liabilities of the Camden and Atlantic R. R. in the year 1880 were as follows—

Common stock—7548 shares at \$50 .....	\$377,400
Preferred stock—17613 shares at \$50 .....	880,650
First mortgage 7% bonds .....	490,000
Second mortgage 6% bonds .....	497,000
Other bonds and mortgages .....	95,400

A \$40,000 subscription was authorized towards the building of the Philadelphia, Marlton, and Medford R. R. A 3½% dividend was paid on preferred and common stock in preferred stock scrip.

Extensive track improvements were made in Atlantic City in 1881 with additional track construction on Atlantic Ave. extending the tracks along Absecon Beach south from Florida Avenue for four miles. This road was opened for passenger and freight traffic and a regular train commenced operating, Sundays only, on December 18, 1881. In addition, improvements were made at the Inlet in Atlantic City by the purchase of a hotel and the construction of a 600 foot timber and stone bulkhead to prevent the washing away of the shore at this point.

Due to the great competition for the Atlantic City business an increased number of passenger and freight trains were operated, but without increasing total expenses as the maintenance of way expenses were reduced on account of the good condition of the road. No dividends were paid on stock in 1881, but the following year a dividend of 4% was paid on the preferred stock.

An important change in the status of the Camden and Atlantic occurred in 1883 with the securing of the controlling interest of the C. & A. by the Pennsylvania Railroad and William Elkins, a director of the Pennsylvania, assuming the presidency of the road. From this time on, second-hand equipment and locomotives of the larger road were passed down to the C. & A., and continued changes were made indicating the eventual consolidation of the road into the Pennsylvania's collection of New Jersey railroads.

A dividend of 7% was paid in 1883 on the preferred stock and during the year \$125,000 worth of consolidated mortgage bonds of the company were sold at a 2½% premium, making the total issue of these bonds \$350,000. The proceeds of these bonds were applied principally to payment of floating debt which had been carried over from the preceding year. The directors of the road concluded that as there was no floating debt, the financial condition of the railroad was satisfactory in every way.

Important improvements were made at the Atlantic City passenger station with three new passenger sheds and a baggage platform being erected. The trains of the West Jersey Railroad used this depot on the payment of a fixed rental.

In order to improve freight facilities a new station and wharf were constructed on Delaware Ave. below Vine St., Philadelphia, where freight of all kinds from Philadelphia was received and loaded directly upon cars which were moved across the river on floats, thus eliminating the hauling of freight across the river by ferry.

The South Atlantic City branch was ballasted to prevent drifting of sand upon the track and a new platform built at South Atlantic City. Trains were operated on the branch throughout the year in order to afford facilities towards building up the lower beach.

The following year the South Atlantic City branch was extended 1½ miles to Longport, work being completed August 30. Although this portion of the beach was but thinly settled the extension was made to foster the growth of the southern portion of Absecon Island.

During 1884, 485 tons of new 60 lb. steel rail was laid and the removal of all stub switches on the road was completed, being replaced by standard split switches and Wharton safety switches. The mileage of the road in 1884 consisted of 58.71 miles of main line from Camden to Atlantic City and 7.05 miles of the South Atlantic City branch to Longport.

On June 14, 1884 the first serious accident marred the safety record of the Camden and Atlantic. Due to disregard of orders by the conductor and engineer of a special train there was a head-on collision with a regular passenger train at 'Pike's Peak,' one mile north of Ashland. Eight persons were killed and eight injured, and the two locomotives and three cars were destroyed. Damages and claims against the railroad amounted to a total of \$30,000.

No dividends were paid in 1884 although the directors concluded that the gross revenue might be regarded as highly satisfactory, considering the general depression in business and the unfavorable weather for seashore travel during the month of July. Average cost figures given for the year show cost of transporting each passenger per mile as \$.0128 with a loss of \$.0017 per passenger per mile. Cost of transporting each ton of freight one mile was \$.0287 with a profit of \$.0077 per ton per mile.

Around 1885 the increasing interest of the Pennsylvania R. R. in the Camden and Atlantic became evident in several changes in policy. One locomotive and one car were purchased from the larger road and one car was rebuilt at the Altoona shops of the Pennsylvania. Freight service was offered to and from the Delaware Ave. Freight Station of the Pennsylvania in Philadelphia and several Atlantic City express trains were operated into the Federal St. Terminal of the West Jersey R. R. in Camden. The funded debt of the C. & A. was reduced \$14,500 by the payment of a mortgage bond in 1885, but no dividends were paid on stock.

The year 1886 found George B. Roberts as President of the Camden & Atlantic R. R. Mr. Roberts, a prominent builder of South Jersey railroads, was first employed in 1860 as Chief Engineer in the building of the Millville and Glassboro Railroad, one of the predecessors of the West Jersey Railroad. In 1875 he became president of the West Jersey Railroad and held that office while serving as president of the C. & A. A director of the Pennsylvania Railroad, he vigorously represented the interests of that system in southern New Jersey and was instrumental in the merger of the various railroads to form the West Jersey and Seashore R. R. He was elected president of the W. J. & S. and served as such until his death on January 30, 1897. His loss was mourned as that of an outstanding engineer, railroad manager, and financier.

During 1887 a branch  $1\frac{1}{2}$  miles long was constructed from Trout Run (Lucaston) to the paint works of John Lucas and Co. at Gibbsboro. Horse car service was provided over this branch in connection with main line trains. Due to the poor condition of the freight slip at Coopers Point the floating of freight across the river was abandoned and freight moved in wagons from the Vine St. freight station in Philadelphia to Coopers Point by ferryboat.

On May 1, 1888 the shops of the Camden and Atlantic at Coopers Point were abandoned and arrangements made with the Pennsylvania R. R. to have all repairs and renewals to rolling stock performed at their new shops at Pavonia.

The dividend record for the period from 1886 to 1889 was poor with no dividend paid in 1886, a cash dividend of 5% on preferred stock in 1887, a preferred stock dividend of  $2\frac{1}{2}\%$  in 1888, and a preferred stock dividend of 3% in 1889. In 1886 the value of the Phila., Marlton, and Medford R. R. stock was reduced to \$26,250 and the difference charged to profit and loss. In 1888 \$150,000 of 5% consolidated mortgage bonds were issued for refunding purposes and sold at a 1% premium.

In early September of 1889 a severe northeast storm resulted in extensive damage to railroad property around Atlantic City, service to that point being suspended on September 10th and 11th as the tracks south of Absecon were submerged.

In order to keep up with the southward trend of growth of Atlantic City, property was purchased on the beach between Albany and Annapolis Avenues and an excursion building erected. In order to provide service to this hotel without having to use Atlantic Avenue, the Chelsea Branch was built from the Thoroughfare Bridge to the new hotel. To provide better street car service in Atlantic City the tracks on Atlantic Avenue were doubled from California Avenue to Albany Avenue, and street car service provided from the Inlet to the new Excursion House. At the same time electric service was provided and the horse cars abandoned. The cars were rebuilt and furnished with electric motors, a power house constructed, and iron poles erected along Atlantic Avenue; the total cost of the improvements being \$70,800.

The mileage of the Camden and Atlantic Railroad as of Dec. 31, 1889 consisted of 58.71 miles of main line, 7.51 miles on the South Atlantic City Branch, and 1.24 miles on the Chelsea Branch: a total of 67.46 miles.

In 1888 two new steam motors were purchased and placed in service from Atlantic City to Longport stopping only at the following stations—Tennessee Ave., Arkansas Avenue, Chelsea, Sea View Hotel, Halfway House, Ventnor, South Atlantic City, Lennig, and Longport. Evidently no local street car service was performed by these steam motors, but only by the horse cars. An additional steam motor was purchased in 1892 for this service, but with the double-tracking and electrification of the Longport Branch in 1893, the three steam motors were sold to the West Jersey Railroad.

Many disputes arose from time to time between the railroad company and Atlantic City as to operation of trains on Atlantic Avenue. At the time of incorporation of Atlantic City on May 1, 1854, the plan for the

layout of the city was made by the railroad. On the original plan Atlantic Ave. was laid out 150 feet in width, with 100 feet in the center for the railroad and a 25 foot street on each side. Due to the objections of property owners this was reduced to a total width of 100 feet with a 60 foot strip in the center for the railroad and a 20 foot highway on each side.

It is interesting to note that under the original city plans Atlantic City was contemplated as a port of entry for Philadelphia to avoid the use of the Delaware River in winter and also as a harbor for trans-shipment for coal for coastwise ports. Original plans showed a port development of five piers at Absecon Inlet, and Maine Avenue was intended to be 100 feet wide to handle street traffic to and from the proposed shipping terminal. Probably several seasons experience with coastal storms and sand and channel troubles convinced the city planners that this scheme was not feasible.

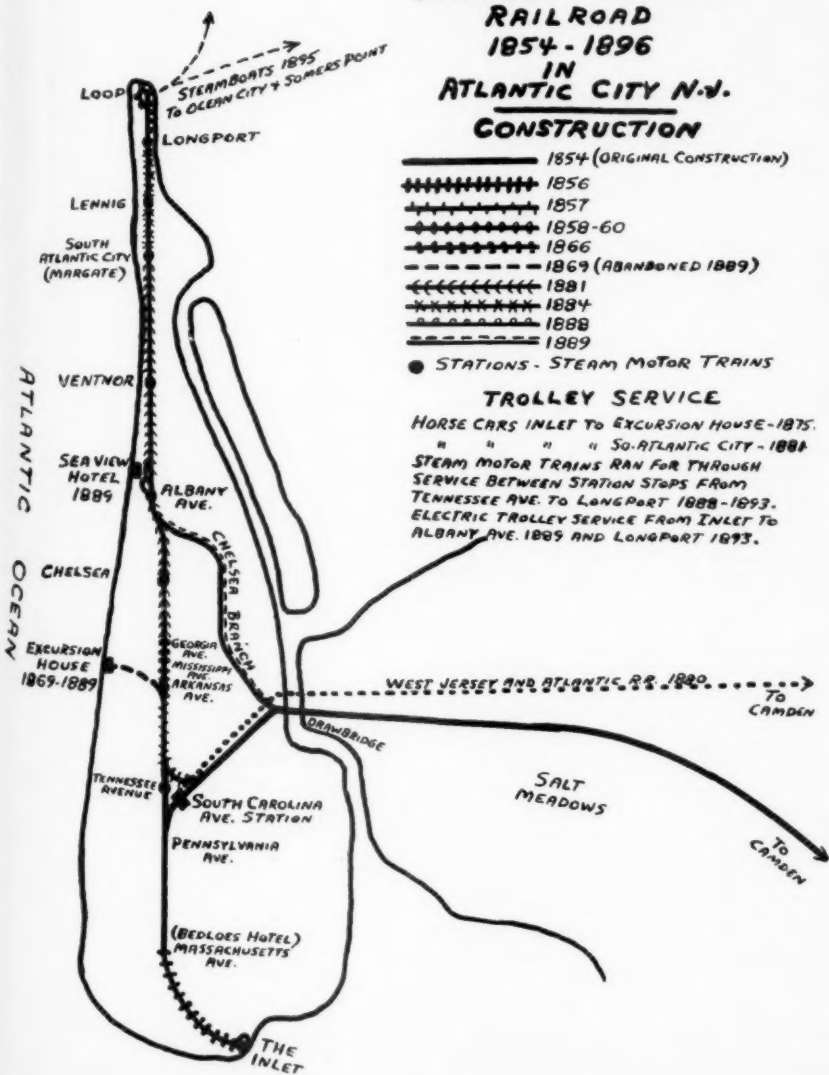
Unmindful of the primary importance of the Camden and Atlantic Railroad in the origination and development of Atlantic City, there was a constant hue and cry from the citizens and local government against train operations on Atlantic Ave. These complaints reached a climax in 1877 with the passage of three ordinances by the local government. The first charged that as the tracks on Atlantic Ave., between Indiana and Arkansas Avenues, had been built after Atlantic Ave. had become a city street and without any legislative or municipal authority or lawful right; that the same were an obstruction to the public use of the street, and a great annoyance to the City and its inhabitants and a public nuisance, and that they should be removed forthwith.

The second ordinance decreed that it was unlawful for the railroad to operate its cars on Atlantic Avenue between Indiana and Arkansas Avenues and imposed a fine of \$100 for each offense. Evidently the railroad thought otherwise for in January 1878 the city passed a third ordinance which stated that as the previous two orders had not been heeded or obeyed in any way, that effective March 1, 1878 it would be unlawful for any person to run or aid in the running of cars of the railroad company in the previously mentioned area. Each offense was punishable by a fine of \$50 or twenty days imprisonment or both.

After much wrangling by both parties an agreement was finally made on June 13, 1881, which stated that the railroad was authorized to construct and maintain two tracks on Atlantic Avenue for its entire length, to operate the tracks for railroad purposes and to use them for horse car service for local passenger traffic. In no case, however, were steam motors to be used for local passenger traffic. The railroad agreed to pay an annual license of \$50 for each horse car used, and to maintain Atlantic Avenue in good repair for its entire length, while the city agreed not to give any future grant to build or operate a railroad along Atlantic Avenue. Evidently some special license was granted to cover operation of the steam motors to Longport starting in 1888.

In 1889, 208 cars of construction material was shipped eastward from Camden for use in the construction of the Brigantine Beach Railroad from Pomona, where it connected with the Philadelphia & Atlantic

# THE CAMDEN & ATLANTIC RAILROAD 1854-1896 IN ATLANTIC CITY N.J. CONSTRUCTION



Camden & Atlantic R. R. Atlantic City, New Jersey, 1854-1896.

C  
B  
o  
o  
m  
m  
o  
P

N  
1  
b  
fi  
in  
is  
l  
m  
th  
e  
th  
d  
r  
p  
e  
in  
to  
A  
b  
C

e  
A  
P  
th  
b

City R. R. and the Camden and Atlantic, to the resort of Brigantine Beach in the next island north of Atlantic City.

On March 29, 1890 all passenger train service, with the exception of one local train each way, was transferred to the Federal St. Terminal of the West Jersey R. R. and Pennsylvania R. R. in Camden. This removal of passenger train service from the Coopers Point Terminal was made because of the proximity of the Federal St. Terminal to the center of Camden and the shorter ferry run to Philadelphia.

In 1890 the capital structure of the Camden and Atlantic was composed as follows—

Capital stock—Common .....	\$ 377,900
Preferred .....	880,200
	<hr/>
First Mortgage Bonds—7%—1893 .....	\$1,258,100
Second Mortgage Bonds—6%—1899 .....	490,000
Consolidated Mort. Bonds—6%—1911 .....	497,000
Consolidated Mort. Bonds—5%—1911 .....	350,000
	<hr/>
	150,000
	<hr/>
	\$1,487,000
Other Mortgage Bonds .....	\$ 88,300
Due Pennsylvania Railroad .....	250,000

The annual fixed charges on the bonded debt amounted to \$92,620. No dividends were paid by the Camden and Atlantic from 1890 through 1893 and considerable financial juggling was necessary to retire maturing bond issues. For the purpose of providing necessary funds to redeem the first mortgage 7% bonds of the company which had been originally issued in 1853 expiring in 1872, but extended to December 31, 1892, there was issued on January 3, 1893 \$500,000 worth of 5% bonds maturing July 1, 1911 under the provisions of the consolidated mortgage. As the first mortgage bonds matured Dec. 31, 1892 it was necessary to borrow from the Pennsylvania R. R. \$225,000 for the purpose of redeeming any bonds that might be presented on that day, the amount being so redeemed coming to \$210,000. The sale of the new bonds on Jan. 3, 1893 enabled the company to repay the loan to the Pennsylvania R. R. In 1893 a 5% debenture certificate maturing Dec. 31, 1903 was issued for \$385,000 to repay the Pennsylvania for advances made from time to time for expenditures on account of construction, equipment, and real estate. This certificate liquidated the entire debt due the Pennsylvania Railroad.

On June 15, 1893 the South Atlantic City Branch commenced operating as an electric trolley line, being double-tracked from Albany Avenue to Longport, 5 miles, and electric cars operating through from the Inlet, Atlantic City, to Longport. During 1894 contracts were made for the building of three new steamboats to operate between Longport, Ocean City, and Somers Point. These boats were placed in service during 1895.

At the close of 1895 all main tracks were either entirely or partially cinder ballasted, thus ending the dust nuisance of gravel ballast. On April 19, 1896 Atlantic City passenger trains commenced running to Broad Street Station, Philadelphia via the Delaware River bridge and the Pennsylvania Railroad. As the line to West Haddonfield had not been completed due to inability to secure complete right-of-way, trains



were run via Camden and the Trenton Branch of the Pennsylvania to the bridge, making a very circuitous and unsatisfactory route. The direct line via West Haddonfield was finally opened in time for the summer season of 1897. This railroad from Frankford Jet. to West Haddonfield was built by the Delaware River Railroad and Bridge Co., a subsidiary of the Pennsylvania.

Under an agreement of February 28, 1896, effective May 4, 1896, the Camden and Atlantic Railroad, Chelsea Branch R. R. Co., and Philadelphia, Marlton, and Medford Railroad were merged and consolidated with the West Jersey Railroad, Alloway & Quinton Railroad Co., and West Jersey and Atlantic R. R. to form the West Jersey and Seashore Railroad Company with 312 miles of railroad, under the control of the Pennsylvania Railroad.

At the time of consolidation the Camden and Atlantic operated the following lines—

Lines Owned	
Main Line, Camden to Atlantic City .....	58.73 miles
South Atlantic City Branch .....	5.67
Atlantic Ave. Branch .....	3.16
	<hr/> 67.56 miles
Lines Operated	
Phila., Marlton, and Medford Railroad .....	11.98 miles
Chelsea Branch Railroad .....	1.23
Coopers Point and Phila. Ferry Co. ....	1.00
Kensington and New Jersey Ferry Co. ....	1.00
	<hr/> 15.21 miles
Total .....	82.77 miles

The capital structure of the Camden and Atlantic at the time of the merger was as follows—

Capital Stock—Common .....	\$ 377,900
Preferred .....	880,250
	<hr/> \$1,258,150
Second Mortgage Bonds—6%—Due 1899 .....	\$ 497,000
Consolidated Mort. Bonds—6%—1911 .....	350,000
Consolidated Mort. Bonds—5%—1911 .....	650,000
Debenture Certificate—5%—1903 .....	385,000
Other bonds and mortgages .....	88,300
	<hr/> \$1,970,300

The company was in fairly good financial condition at the time of the merger, 6½% dividend having been paid on the preferred stock in 1894 and 5% on the preferred stock in 1895. The following securities were owned at the time of consolidation—

1000 shares—Chelsea Branch Railroad .....	\$50,000	par value
828 shares—Coopers Pt. & Phila. Ferry .....	82,800	" "
1880 shares—Kensington & N. J. Ferry Co. ....	94,000	" "
1051 shares—Phila., Marl. & Medford R.R. ....	52,550	" "
76 shares—Sea View Hotel Co. ....	38,000	" "
Phila., M. & M. R. R. 5% 1st Mortgage Bonds ....	19,000	" "



Under the terms of the consolidation the common stock of the West Jersey and Seashore R. R. was exchanged for stock of the Camden & Atlantic as follows—\$377,900 worth of C. & A. common converted at rate of \$20 per share or  $2\frac{1}{2}$  shares for each share of W. J. & S. common, \$880,250 worth of C. & A. preferred converted at rate of \$45 per share of 1 and  $\frac{1}{9}$  shares for each share of W. J. & S. common. All of the bonds were assumed by the new company except the 5% debenture certificate which was paid back to the Pennsylvania R. R. and the cost covered by new bonds issued by the West Jersey and Seashore Railroad.

## DIRECTORS OF THE CAMDEN AND ATLANTIC RAILROAD

### 1870-1896

Robert Frazer	1870-1873	President
Anthony J. Antelo	1870-1876	
†Andrew K. Hay	1870-1882	President 1874-1876
†Samuel Richards	1870-1876	
W. Dwight Bell	1870-1876	
†Enoch A. Doughty	1870-1896	
Joseph W. Cooper	1870-1871	
Samuel G. Wheeler, Jr.	1870-1871	
Samuel R. Colwell	1870-1873	
John F. Starr	1870-1873	1876-1879
George M. Wheeler	1870-1871	
James B. Dayton	1870-1887	
Charles Camblos, Jr.	1870-1876	
John Lucas	1872-1882	President 1876-1877
John S. Newbold	1872-1876	
Charles F. Davenport	1872-1873	
Thomas H. Dudley	1874-1894	
William Massey	1874-1876	
Charles R. Colwell	1874-1876	
Samuel C. Cooper	1874-1884	
George T. DaCosta	1876-1882	
William C. Allison	1876-1877	
Charles D. Freeman	1876-1884	President 1877-1884
Joshua R. Jones	1876-1884	
William C. Houston	1876-1882	1884-1896
John A. Merrit	1876-1882	
George W. Steever	1877-1882	
Edmund E. Read	1879-1896	
John B. Hay	1882-1896	
J. Lowndes Newbold	1882-1884	
MacGregor J. Mitcheson	1882-1884	
Franklin Evans	1882-1884	
William Worrell	1882-1884	
William T. Ladner	1882-1884	
*William L. Elkins	1884-1896	President 1884-1887
†*Frank Thomson	1884-1887	
Richard D. Barclay	1884-1894	
John Pearce	1884-1885	
Charles P. Stratton	1884-1885	
Samuel Fox	1884-1885	
Crawford Miller	1884-1896	
*Joseph N. DuBarry	1885-1893	
*Henry D. Welsh	1885-1896	
†William Bettle	1885-1896	

‡*George B. Roberts	1887-1896	President
William C. Dayton	1887-1896	
‡Samuel Rea	1893-1896	
‡W. J. Sewell	1894-1896	
‡*Charles E. Pugh	1894-1896	

NOTES—

† Original Incorporator of the Camden and Atlantic Railroad

‡ Also a Director of the West Jersey Railroad

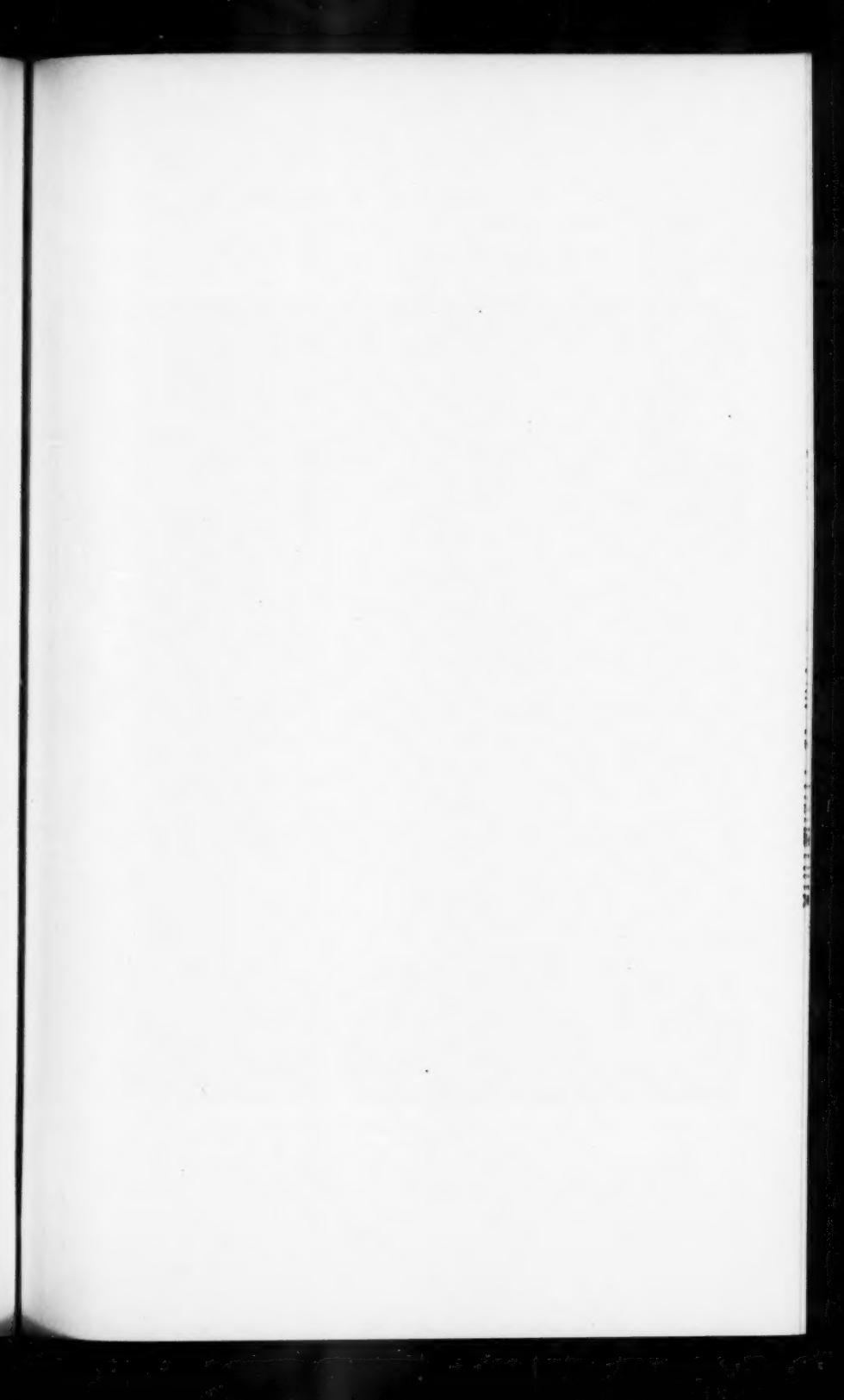
\* Also a Director of the Pennsylvania Railroad

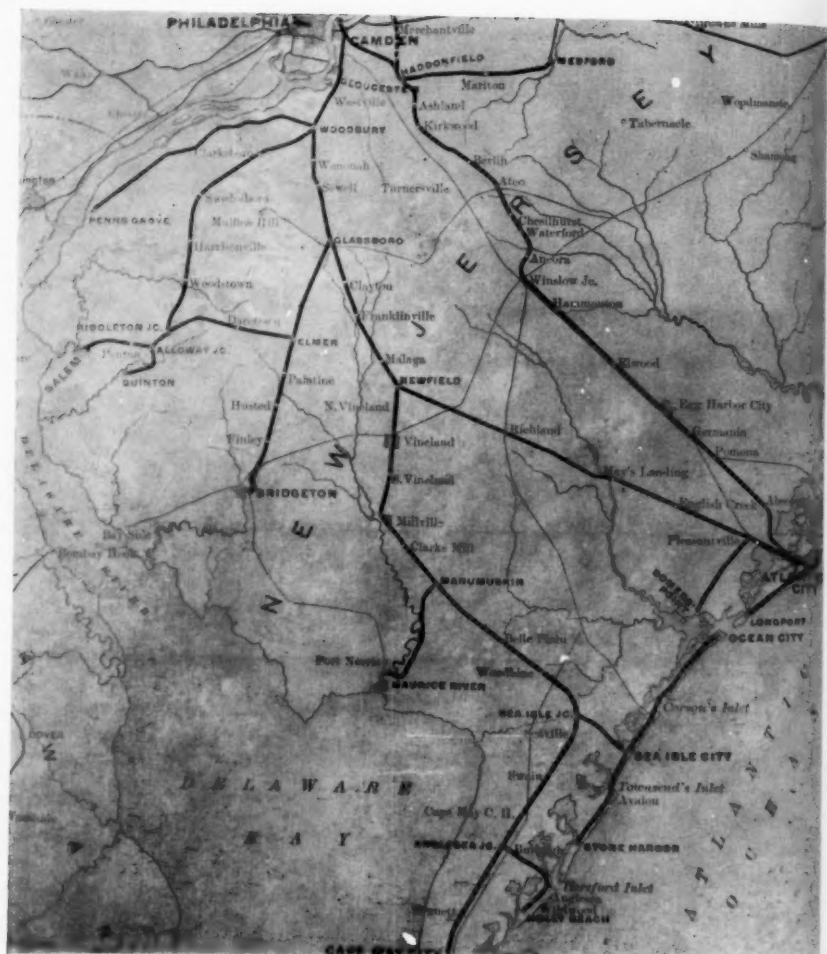
## CAMDEN AND ATLANTIC RAILROAD

Year	Miles Oper.	Passengers Carried	Annual Statistics		Expenses	Rentals	Profits*
			Tons Fght. Carried	Gross Earnings			
1855				\$122,415			
56				117,889	\$ 72,366		\$ 45,523
57				122,924	71,425		51,499
58				133,222	75,257		57,965
59				152,155	85,702		66,453
1860				160,043	105,181		54,862
61				99,433	69,357		30,076
62				114,386	79,259		35,127
63				165,554	118,282		47,272
64				220,338	152,650		67,688
65				266,848	178,350		88,498
66				288,650	149,395		139,255
67				306,972	149,927		157,045
68				325,041	174,946		150,095
69				320,678	174,620		146,058
1870				333,515	167,083		166,432
71		366,818	66,262	364,500	184,121		180,379
72		417,186	69,324	467,036	254,917		212,119
73			104,541	508,996	298,409		210,587
74			112,714	529,887	288,140		241,747
75			113,731	548,492	340,850		207,642
76			93,956	564,851	297,878		266,973
77				477,483	300,442		177,041
78				399,061	277,848		121,213
79				495,473	293,346		202,127
1880				498,838	371,627		127,211
81	59.79			512,880	373,864		139,016
82				550,406	360,084		190,322
83	65.42	1,005,579	157,037	558,871	392,067		166,804
84	66.76	1,064,458	150,245	556,695	471,056		85,639
85	79.27†	1,099,002	125,452	561,347	427,204	\$12,337	121,806
86	79.27	1,183,832	144,205	599,091	469,316	7,014	122,761
87	79.27	1,376,072	162,181	678,644	540,081	4,960	133,603
88	81.24	1,288,580	166,026	696,128	564,635	13,652	117,841
89	81.17	1,406,786	204,480	737,144	591,853	10,378	134,913
1890	82.49	1,469,550	297,335	799,491	668,787	10,111	120,593
91	82.49	1,509,727	249,504	800,970	649,254	10,778	140,938
92	82.49	1,601,823	240,097	807,924	670,371	8,856	128,697
93	82.78	1,447,169	282,036	843,324	661,239	13,087	168,998
94	82.77	1,372,733	288,518	888,147	648,190	16,185	223,772
95	82.77	1,374,913	291,903	954,076	716,622	4,719	232,735

Notes—\* Before charges.

† Includes Phila., Marlton, and Medford R. R.





West Jersey & Seashore R. R. Map of 1897.

Pas  
Fre  
Exp  
Ma  
Oth

vid  
the  
in  
str  
the  
mi  
wo

wa  
pa  
an  
aft  
to  
It  
to

in  
ha  
to  
an  
sh  
At  
re

De  
re  
an  
th  
er  
ac

Gr  
in  
en  
re  
w

### DISTRIBUTION OF GROSS RECEIPTS

	1870	1875	1880	1885*	1890*	1895*
Passenger	\$222,069	\$316,407	\$292,590	\$396,041	\$557,518	\$695,081
Freight	92,094	131,800	106,959	106,559	157,729	181,412
Express	15,760	36,604	32,460	34,086	48,108	55,496
Mail	3,000	4,500	3,745	4,842	7,515	6,911
Other	1,530	59,180*	63,085*	19,818	28,620	15,176

Note—\* Includes receipts of subsidiary companies.

### MAY'S LANDING BRANCH

The charter of the Camden and Atlantic R. R., March 19, 1852 provided that a branch could be constructed from some convenient point on the main line of the Camden and Atlantic to the village of May's Landing in Atlantic County. In 1862 it was proposed that this branch be constructed under the charter from Egg Harbor City to May's Landing, the head of navigation on the Great Egg Harbor River, a distance of 7 miles. The route was surveyed and from 5 to 6 miles located when the work had to be stopped due to financial difficulties.

A separate charter for the May's Landing and Egg Harbor R. R. was obtained in 1871 and an agreement entered into with the new company to lease the finished road for 999 years effective June 1, 1872. An annual rental of \$2675 for the first five years and \$5000 yearly thereafter was to be paid. The railroad was not to cost over \$70,000 and was to be paid for with a bond issue of \$37,500 and a stock issue of \$32,500. It was to be laid with 40 Lb. rail and to be built in a manner satisfactory to the Camden and Atlantic R. R.

After consideration it was felt that 40 Lb. rail would be too light in case main line engines would be used on the branch and that second hand iron rail from the main line would be better. A clause was added to the agreement that the M. L. & E. H. R. R. should pay to the Camden and Atlantic \$34,825—the cost of the 40 Lb. rail—and that the C. & A. should supply such iron as they saw fit. To do this the Camden and Atlantic purchased new iron for ten miles of track and the rail thus removed from the main line was turned over to the May's Landing road.

The railroad was opened for business to May's Landing June 1, 1872. During the first year of operation 8843 locomotive miles were operated, rent and expenses amounting to \$6288 and receipts to but \$2329. The annual report notes that income was not large, but it was not anticipated that expenses would be met for several years. Traffic on the branch increased steadily and as this increase was passed over to the main line the actual loss may not have been as great as indicated.

In 1873 the branch was extended at May's Landing 1300 feet to the Great Egg Harbor River. Expenses were \$6938 and receipts \$3799 and in 1874 expenses were \$4745 and receipts \$3601. The next year the force employed in operating the line was reduced, but it was noted that further reductions could not be made as only 6 men were employed. The roadway was in fair condition, but 15-20 tons of rail were needed for renewal.

The financial results for the succeeding years were doleful indeed

with the period 1875-80 showing operating expenses of \$51,100 and gross receipts of only \$20,850 with locomotive mileage around 9800 miles per year. An 1875 timetable for the branch shows two trains each way daily connecting with main line trains at Egg Harbor to and from Camden.

In 1880 the annual report concluded that the May's Landing road had not proved its capacity to earn its operating expenses, although these expenses had been reduced to the lowest point at which the road could be worked. It required a large expenditure for ties, rail, and repairs. It was further stated that no management of this road, no matter how energetic and watchful, could enable it to earn its operating expenses. The board of directors of the Camden and Atlantic then issued the following statement to its stockholders concerning the May's Landing road—

"This road was built by the May's Landing and Egg Harbor R. R. Co. of old iron rails and low grade of cross ties at a cost of \$70,000, of which \$37,500 was financed by 7% mortgage bonds; the road then being leased to the Camden and Atlantic at a yearly rental of \$5000 and taxes to the state of New Jersey. This lease was made by the then directors of the C. & A. R. R. without submitting the same to the stockholders for their approval. The C. & A. R. R. after execution of the said lease took possession of the May's Landing road and furnished it with motive power and rolling stock and started operations. Its earnings however never equalled its operating expenses. The present board of directors is now advised by counsel that said lease is not binding or operative on the Camden and Atlantic R. R. without approval of its stockholders and that such approval is necessary to its legality. The roadbed as to its ties, bridge work, and rail is in a dilapidated condition and will require an outlay of \$30,000 to restore it to proper condition. Its only value is its old iron worth about \$20,000. The question of the lease is referred to the stockholders—"

This seems by present day standards a very shady proceeding as at the time of the lease the board of directors were fully aware of the financing of this road and the standards to which it was built were dictated by the Camden and Atlantic.

Operation of the branch continued during 1881 with expenses of \$8655 and receipts only \$2143. Operation of the road ceased Feb. 1, 1882 the stockholders evidently concurring with the directors. The M. L. and E. H. R. R. Co. promptly brought suit for rental and the case dragged through the courts for many years. In 1884 the C. & A. posted \$1084 with the court as amount of rental due the M. L. & E. H. at the time operation ceased. In 1886 \$2000 was paid in settlement of claims and it was noted that \$5300 had been spent for legal expenses in connection with the settlement. In 1887 \$20,500 was paid by order of the court to the M. L. & E. H. for rental from 1882 to 1886. In order to rid themselves of this incubus the C. & A. began to purchase securities of the branch road. In 1892 after several suits, all going against the C. & A., \$9200 was paid for 1891 and 1892 rental. The Camden and Atlantic R. R. concluded that rental would have to be paid regularly and would be a fixed charge until the securities of the M. L. & E. H. could be bought.

During 1893 the regular rental was paid and the rails of the May's Landing road were torn up from May's Landing to the Philadelphia and Atlantic City crossing at Egg Harbor. In 1894 \$5000 rental was paid and \$20,000 was spent to secure bonds and stock of the branch road. The M. L. & E. H. directors vigorously protested removal of their property but on Dec. 5, 1895 after paying \$2345 rental and \$21,000 for securities the C. & A. gained majority control and the M. L. & E. H. directors were replaced with Pennsylvania R. R. men.

On November 4, 1896 by virtue of the fact that the M. L. & E. H. had ceased to exist physically for over five years and the West Jersey & Seashore owned all but four shares of stock which could not be located, the directors passed a resolution dissolving the company and on Nov. 5, 1896 filed the certificate of dissolution with the Secretary of State at Trenton. Thus ended a very costly and troublesome effort on the part of the Camden and Atlantic to secure a branch line feeder.

### ATSION BRANCH

Under the charter of the Camden and Atlantic Railroad, March 19, 1852, that road was granted the right to construct and operate a branch from some convenient point on the main line, to be determined by the company, to Atsion and thence to the village of Batsto in the county of Burlington. As the territory to be served by this branch was but sparsely settled nothing was done about building the road for nine years.

The construction of the Raritan and Delaware Bay Railroad from Port Monmouth south through the center of the state was the spark that evidently brought action on the construction of the Atsion branch. It was probable that the management of the two roads foresaw a new route to compete for the through Philadelphia-New York business by way of the C. & A. from Camden to Atco, the branch road to Atsion, and thence up the R. & D. B. to Port Monmouth on Raritan Bay and only a short steamboat trip from New York City.

By contracts dated October 25, 1861 and February 16, 1862 between the Camden and Atlantic R. R. and the Raritan Bay R. R. Co. provision was made for construction of a connecting branch between the two roads under the charter of the Camden and Atlantic for such a branch. The branch was to be constructed and located under direction of the Raritan and Delaware Bay R. R. and by contractors named and money furnished by said road. The R. & D. B. was to be reimbursed by a certain percentage of the gross receipts from the operation of the branch.

The line was not constructed according to contract and was never accepted by the Camden and Atlantic R. R. During the course of its construction a bill was filed in chancery by the Camden and Amboy R. R. praying for an injunction against its completion. The injunction was not allowed and the railroad was opened for business from Atco to Atsion, 9¼ miles, in September 1862.

In June 1863 a supplemental bill was filed by the Camden and Amboy Railroad praying that the Camden and Atlantic R. R. and the Raritan and Delaware Bay R. R. should be restrained from transporting

passengers and merchandise over their united roads between New York and Philadelphia. The injunction was granted November 16, 1865. The decree was appealed, but was confirmed by the court of Errors and Appeals November 30, 1867. This was but another example of the political power of the Camden and Amboy R. R., which was constantly under attack by the residents of New Jersey as a vicious monopoly. It is difficult to understand how the roundabout route proposed by the C. & A. and R. & D. B. could have ever offered a serious threat to the Camden and Amboy's business, but the larger road evidently intended to harbor no opposition whatsoever.

With the adverse decision of the court, business was suspended on the Atsion branch. The Camden and Atlantic concluded that although the branch was built with fair prospects, the business had not been and never would be profitable, and decided to withdraw its interest completely.

The contractors for the branch brought suit against the Camden and Atlantic R. R. to recover the price of its construction, but the suit never came to trial and by agreement of February 22, 1870 the branch was turned over to the plaintiffs. On the same day all proceedings in the suit brought by the Camden and Amboy R. R. were halted by agreement and the claims of the complainant abandoned.

By previous agreement between the Camden and Atlantic R. R., S. W. and W. A. Torrey (contractors who built the branch), and the Raritan and Delaware Bay R. R. made Sept. 14, 1869, the road was to be conveyed to the latter railroad upon the settlement of the litigation. This agreement was confirmed by a special act of legislature Feb. 16, 1870 and the Atsion branch became the property of the R. & D. B.

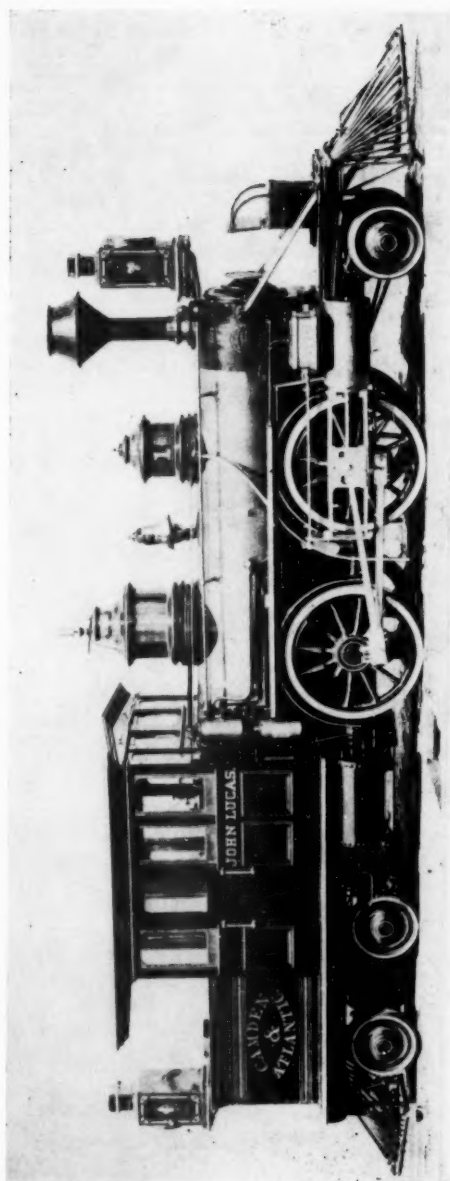
The New Jersey Southern R. R. (successor to the Raritan and Delaware Bay) and subsequently the Central Railroad of New Jersey, which acquired the New Jersey Southern, operated this branch for many years as a connection with the Williamstown R. R. and the Philadelphia and Atlantic City at Ateo. It was finally abandoned by the C. R. R. of N. J. around 1910.

### **PHILADELPHIA, MARLTON & MEDFORD R. R.**

In 1879 the building of a railroad from Haddonfield, N. J., connecting with the Camden and Atlantic R. R., to the village of Medford in Burlington County was started by the P. M. & M. R. R. Co. The directors of the C. & A. decided that since this road ran through a rich agricultural country it would prove a valuable feeder and subscribed \$40,000 for purchase of P. M. & M. stock. During 1879 the Camden and Atlantic hauled considerable material used in the building of the Medford road. The asset sheet of the C. & A. for 1880 showed that \$6750 stock of the smaller road had already been purchased.

The P. M. & M. was completed from Haddonfield to Medford, 11.7 miles, on October 12, 1881. The road ran through a beautiful, populous, and wealthy country and according to the annual reports showed promise of being profitable to its stockholders and a valuable feeder to the Camden





Courtesy of Baldwin Locomotive Works

C & A (2nd) #1, "John Lucas," Baldwin #4287, March, 1878.

1  
a  
l  
in  
r  
th  
r  
fo

lar  
rep

to l  
was  
the  
R. I  
per

man  
the  
1931  
main  
1941

---

and Atlantic. The larger road in 1881 owned 800 shares of the Medford road stock at a par value of \$40,000. In order to aid in its construction the C. & A. sold 1138 tons of second hand rail from the main line to the Medford road at \$35 per ton. After completion of the P. M. & M. it was operated by the Camden and Atlantic and charges made only for the actual operating cost. The P. M. & M. maintained its own roadbed, bridges, stations, etc. with its own force.

During 1882 a total of 17,634 locomotive miles were operated on the Medford road with expenses of \$6962 and receipts of \$7142. During 1883 trains were operated between Mt. Holly and Camden via Medford and Haddonfield offering excellent facilities to residents along the line. In 1883 \$52,500 worth of P. M. & M. stock was owned by the C. & A. and in the next year 1050 shares or a majority of the stock of the Medford road was owned by the Camden and Atlantic. Complete operation of the P. M. & M. was assumed by the C. & A. Jan. 1, 1885. This small road achieved fine results from a financial standpoint as shown by the following figures—

	Gross Earnings	Operating Expenses	Net	Passengers Carried	Tons Freight
1885	\$20,429	\$16,344	\$4085	76,357	9390
1886	22,040	19,596	2444	80,644	13916
1887	23,325	22,750	575	84,694	12008
1888	22,862	17,654	5208	85,628	12711
1889	22,234	26,624	*4390	85,802	8988
1890	28,472	26,880	1592	92,287	13096
1891	32,991	27,454	5337	91,645	28381
1892	30,056	21,200	8856	90,042	17555
1893	29,230	20,113	9117	85,716	17929
1894	31,862	23,458	8404	81,046	42554
1895	25,257	25,030	227	78,385	18247

Considerable expense was incurred on the Medford road due to the large number of long and high bridges which were constantly in need of repair. A number of them were filled in to eliminate maintenance cost.

In 1891 \$34,000 of 5% first mortgage bonds were issued which proved to be a serious drain on the company. On May 4, 1896 the P. M. & M. was merged with the Camden & Atlantic, West Jersey R. R., etc. to form the West Jersey and Seashore R. R. The \$102,900 worth of P. M. & M. R. R. stock was converted to W. J. & S. stock at an exchange price of \$15 per share or 3 1/3 shares of P. M. & M. stock for each share of W. J. & S.

The road was operated as the Medford Branch of the W. J. & S. for many years. The inroads of truck and automobile competition forced the abandonment of passenger service in the twenties, and on May 18, 1931 the road was torn up from Freeman station to Medford. The remaining mile of track was retained as an industrial spur until Sept. 11, 1941 and with its removal the P. M. & M. R. R. passed into history.

\* Deficit

## CONNECTING RAILROADS

### WILLIAMSTOWN RAILROAD

In 1871 a railroad was constructed from Atco, on the Camden and Atlantic 19 miles from Camden to the village of Williamstown, 8 miles to the south. This road passed through a rich and thickly populated district and served a large glass factory at Williamstown. With the building of this road the Camden and Atlantic acquired a feeder that was expected to bring considerable freight and passenger business to the larger road.

The Williamstown R. R. evidently had more equipment than it needed as in 1872 the Camden and Atlantic leased the locomotive 'Williamstown' and two passenger cars for summer service.

An 1875 timetable shows the Williamstown R. R. operating two trains each way daily leaving Atco 9.10 am and 4.55 pm for Williamstown and leaving Williamstown 8.00 am and 4.30 pm for the northern terminus. Connections were made at Atco with Camden and Atlantic trains to and from Camden.

In 1881 the Williamstown R. R. owned one passenger car, 4 box cars, and 4 gondolas for joint use between the two roads.

During 1880 the Philadelphia and Atlantic City Railroad was opened for business as a narrow gauge railroad between Camden and Atlantic City competing with the Camden and Atlantic R. R. In the fall of 1884 this road was converted to standard gauge, and interchange was made with the Williamstown R. R. at what is now Williamstown Jet. From the year 1885 on, the Camden and Atlantic had practically no interchange business with the Williamstown R. R.

The Williamstown R. R. was subsequently absorbed by the Philadelphia and Atlantic City R. R. and extended to Glassboro and Mullica Hill. The portion from Williamstown Jet. to Atco was operated for many years as a connection with the Central Railroad of New Jersey, and later as an industrial spur until its abandonment by the Pennsylvania-Reading Seashore Lines in 1942.

After the merger of the West Jersey and Seashore R. R. and the Atlantic City R. R. to form the Pennsylvania-Reading Seashore Lines June 25, 1933, the portion of the former Williamstown R. R. between Williamstown Jet. and Williamstown, 6 miles, was abandoned. The portions between Williamstown and Glassboro, and Glassboro and Mullica Hill, are still operated by the PRSL for freight service only.

### VINELAND RAILROAD

On August 9, 1871 the Vineland R. R. was opened for freight and passenger traffic from Atsion on the New Jersey Southern R. R. to Vineland. This railroad crossed the Camden and Atlantic at Winslow Jet. and considerable traffic was exchanged with the Camden and Atlantic. It offered a competing route to the West Jersey R. R. for the considerable agricultural business around Vineland. By 1875 the New Jersey Southern R. R. had control of the Vineland R. R. and it had been extended to Bridgeton and Bayside, on the Delaware River. The Bridgeton and Port Norris R. R. had been built to the Maurice River area and was later acquired by the New Jersey Southern.

With the conversion of the Philadelphia and Atlantic City R. R. to standard gauge most of the interchange business went to that railroad and the Camden and Atlantic again lost a potentially valuable freight traffic feeder. The New Jersey Southern was acquired by the C. R. R. of N. J. and all its lines are still operated by that road.

## CAMDEN AND ATLANTIC R. R.

### MOTIVE POWER ROSTER

No.	Name	Builder	Date	Type	Cylinders	Drivers	Notes
—	Little Giant	—	1854?	Dummy	—	—	Scrp'd. 1873
—	Dykens	—	1854?	—	—	—	Demolished 1870
1	Surf	Baldwin	Jan. 1855	4-4-0	13½-24	60	Condemned 1876
1	John Lucas	"	Mar. 1878	2-4-4-T	11-18	51	Cost \$5900
2	Curlew	Swinburne	1855	4-4-0	15-22	60	
3	Tempest	"	1853	—	15-22	60	ex 'Atsion'
4	J. Brodhead	Baldwin	Jun. 1863	4-4-0	15-24	60	
5	Sea Gull	"	Jun. 1866	4-4-0	16-24	60	
6	Atlantic	"	Dec. 1867	4-4-0	16-24	60	
7	Petrel	Rogers	1869	—	15-24	60	
8	Camden	Baldwin	Apr. 1871	4-4-0	17-22	66*	Cost \$11,250
9	Pacific	"	Apr. 1873	4-4-0	16-24	61	
10	Arctic	"	Apr. 1873	4-4-0	14-24	61	
11	Oriental	"	Apr. 1874	4-4-0	15-24	61	Cost \$10,000
12	New Jersey	"	Mar. 1875	4-4-0	15-24	62	
13	Andrew K. Hay	"	Mar. 1876	4-4-0	16-24	62	Cost \$8,900
14	J. C. DaCosta	"	Jul. 1879	4-4-0	16-24	62	
15	Chas. D. Freeman	"	Apr. 1880	4-4-0	17-22	66	
16	Robert Frazer	"	Apr. 1880	4-4-0	17-22	66	
—	Williamstown	"	Apr. 1872	4-4-0	14-22	56¾	Note A

### NOTES

\* Changed to 60" drivers 1874.

A Leased from Williamstown R. R. 1872 for summer service. Subsequently named 'Atco.'

Cost of original five engines Little Giant, Dykens, Surf, Curlew, and Atsion was \$51,856.91.

Locomotive 'John Lucas' was purchased for suburban service.

Cost of engines Brodhead, Sea Gull, Atlantic, and Petrel was \$37,738.60.

Cost of engines Pacific and Arctic was \$27,450.

Locomotives Nos. 15 and 16 were bought for high speed summer service and designed for anthracite coal.

## CAMDEN AND ATLANTIC R. R.

### NOTES ON MOTIVE POWER

1883—Passenger locomotive No. 17 purchased.

1884—Two locomotives destroyed in Pike's Peak wreck. One locomotive rebuilt in company shops. The other was replaced by a locomotive purchased from the Alexandria and Fredericksburg Railway.

1885—One locomotive scrapped and replaced by locomotive purchased from the Pennsylvania Railroad.

1886—System of numbering locomotives changed during year. One locomotive badly damaged in accident at Ancora and scrapped.

1887—One freight and one passenger locomotive purchased from Pennsylvania R. R. at cost of \$13,773.80.

1888—One class Ba passenger locomotive purchased from Pennsylvania Railroad. Two steam motors purchased for trolley service on the South Atlantic City Branch. According to annual reports the Camden and Atlantic R. R. in the year 1877 rented additional motive power from the Pennsylvania R. R. for the

heavy summer service. From infrequent entries in subsequent reports it is probable that this rental continued until 1895 as the C. & A. never had more than 18 engines in service, which number very probably would be insufficient for summer excursion service.

- 1889—Second-hand class A anthracite locomotive purchased from the Pennsylvania Railroad.  
 1890—One new class P locomotive and one second-hand class H locomotive purchased from Pennsylvania R. R. to replace two condemned locomotives which were sold.  
 1891—Two locomotives purchased from Pennsylvania Railroad to replace two old engines which were condemned and torn down at Camden shops.  
 1892—One locomotive purchased from Pennsylvania R. R. to replace No. 504 condemned as unfit for service. Steam motor for use on South Atlantic City branch purchased from Baldwin's.  
 1893—Three steam motors, formerly used on South Atlantic City Branch, sold to West Jersey Railroad. This was done as a result of the electrification of the branch line.  
 1894—One standard class H locomotive purchased from Pennsylvania R. R. to replace No. 508, unfit for further service.  
 1895—Two passenger locomotives purchased from Pennsylvania R. R. to replace two old locomotives withdrawn from service.  
 Number of original Camden & Atlantic R. R. locomotives purchased 1854 to 1883—21  
 Original C. & A. locomotives in service 1883—17  
 C. & A. locomotives withdrawn 1884-95—14\*  
 Purchased from Pennsylvania R. R. 1884-95—13  
 Purchased from A. & F. R. R.—1

\* Estimated

Thus it can be seen that at the time of consolidation with the West Jersey R. R. in 1896 there were only three or four of the original C. & A. locomotives left in service and that the great majority of the power was of Pennsylvania origin.

Some idea of the cost of locomotive operation in the seventies can be gained from the following figures given in the annual reports—

	1871	1872	1873	1874	1875	1880	1881
Miles run per ton of coal	74.3	64.3	57.5	56.6	—	—	—
Miles run per quart of oil	32.7	28.9	35.2	42.8	—	—	—
Cost per mile—Total cents	—	—	—	20.9	20.9	20.5	19.2

## CAMDEN AND ATLANTIC RAILROAD

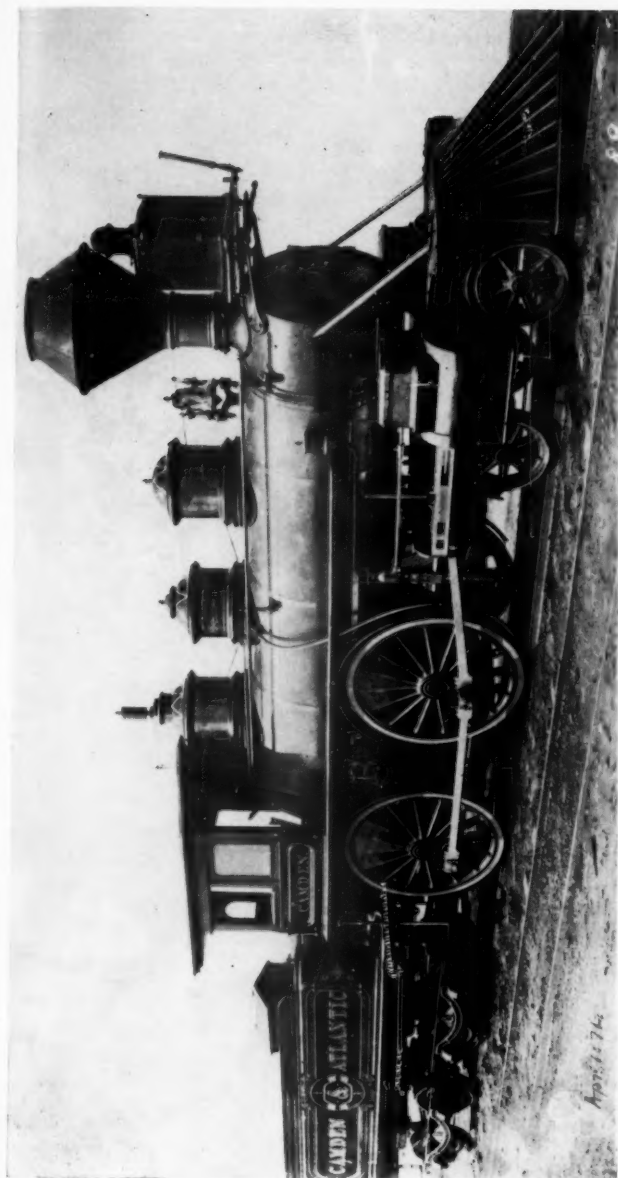
### SUMMARY OF MOTIVE POWER ON HAND 1883 TO 1895

As of Dec. 31	In service Good Order	In service Repairs needed	In shop for repairs	Condemned	Total	Mileage
1883	12	2	3	—	17	353,201
1884	15	—	2	—	17	501,107
1885	13	1	2	—	16	446,898
1886	14	—	1	—	15	472,958
1887	13	1	3	—	17	496,761
1888	15	3	1	—	19*	513,952
1889	12	4	4	—	20*	536,744
1890	16	2	—	2	20*	598,867
1891	16	2	1	1	20*	579,513
1892	17	3	1	—	21†	582,939
1893	13	—	5	—	18	554,882
1894	15	—	3	—	18	543,630
1895	13	2	3	—	18	567,121

Notes—

\* Including two steam motors used on South Atlantic City Branch for street car service.

† Including three steam motors used on South Atlantic City Branch for street car service.



Courtesy of Baldwin Locomotive Works

C & A #8, "Camden," Baldwin #2432, April, 1871.

As of  
Dec.

1870  
1871  
1872  
1873  
1874  
1875  
1876  
1877  
1878  
1879  
1880  
1881  
1882  
1883  
1884  
1885  
1886  
1887  
1888  
1889  
1890  
1891  
1892  
1893  
1894  
1895  
1896  
1897  
1898  
1899  
1900

NO

187  
ser



### MAXIMUM MILEAGE MADE BY ANY LOCOMOTIVE

Year ****	Passenger Locomotive No.	Miles	Freight Locomotive No.	Miles
1883	17	27,048	8	23,759
1884	10	40,717	8	31,138
1885	10	40,025	8	25,958
1886†	510	36,333	508	19,374
1887	513	32,900	502	18,984
1888	503	36,330	502	27,084
1889	512	40,784	502	31,708
1890	517	38,947	502	29,685
1891	505	34,996	502	22,188
1892	505	36,288	509	21,701
1893	501	35,478	502	33,354
1894	515	33,872	502	28,211
1895	38	33,825	509	28,097

Notes—

† Locomotives renumbered.

### CAMDEN AND ATLANTIC RAILROAD

#### SUMMARY OF PASSENGER CAR EQUIPMENT FROM 1870 TO 1895

As of Dec. 31	1st Class Cars	2nd Class Cars	Baggage Cars	Mail Cars	Smoking Cars	Parlor Cars	Cars 3rd Class	Pas- senger Cars	Com- bine Cars	Total
1870	19	15	4	2	—	—	—	—	—	40
1871	19	24	4	2	1	—	—	—	—	50
1872	19	26	5	2	1	—	—	—	—	53
1873	27	25	5	2	2	—	—	—	—	61
1874	27	25	6	2	2	—	—	—	—	62
1875*	8	19	—	2	2	—	25	—	—	56
1876	16	19	3	2	2	—	25	—	—	67
1877	16	20	4	2	2	—	24	—	—	68
1878	16	20	4	3†	2	—	24	—	—	69
1879	16	20	4	3†	2	—	24	—	—	69
1880	26	20	4	3†	2	—	24	—	—	79
1881*	—	—	4	—	—	—	—	66	9	79
1882	—	—	4	—	—	—	—	66	9	79
1883	—	—	4	—	—	—	—	68	9	81
1884	—	—	4	—	—	—	—	68	9	81
1885	—	—	7	—	—	—	—	54	7	68
1886	—	—	7	—	—	—	—	47	8	62
1887	—	—	7	—	—	—	—	47	8	62
1888*	—	—	7	—	—	—	—	55	—	62
1889	—	—	7	—	—	6	—	55	—	68
1890	—	—	9	—	—	6	—	62	—	77
1891	—	—	11	—	—	6	—	65	—	82
1892	—	—	11	—	—	6	—	68	—	85
1893	—	—	12	—	—	6	—	68	—	86
1894	—	—	12	—	—	6	—	68	—	86
1895*	—	—	12‡	—	—	6	—	61	7	

NOTES—

\* Classification system in annual reports revised.

† One first class and two second class.

‡ Including 3 combined Baggage-Mail and 4 Baggage-Express.

Until 1874 the number of cars not in use as of Dec. 31st were also given—  
1870: 25, 1871: 36, 1872: 36, 1873: 40, 1874: 43. These cars were reserve for summer service.

### Street Cars used on Atlantic City-South Atlantic City Branch

1876—1881—5 Open Horse Cars, 3 Closed Horse Cars				
1883—17	1884—17	1885—18	1886—18	1887—21
1888—28	1889—31	1890—45	1891—50	1892—52
1893—56	1894—56	1895—56		

On May 4, 1896 The Camden & Atlantic R. R. was consolidated with the West Jersey Railroad and other lines to form the West Jersey and Seashore R. R. Last separate car report was that of Dec. 31, 1895.

## CAMDEN AND ATLANTIC RAILROAD

### SUMMARY OF FREIGHT CAR EQUIPMENT FROM 1870 TO 1895

As of Dec. 31	Eight Wheel Box	Four Wheel Box	Eight Wheel Flat	Four Wheel Flat	Four Wheel Lime	Eight Wheel Tim- ber	Wreck- or Tool	Ca- boose	Eight Wheel gondola	Dump Cars	Total
1870	28	4	31	10	14	2	—	—	—	—	89
1871	30	1	44	6	14	2	—	—	—	—	97
1872	36	—	55	2	12	2	1	—	—	—	108
1873	46	—	58	—	7	3	1	—	—	—	115
1874	46	—	58	—	13	3	1	—	—	—	121
1875	47	—	68	—	13	3	1	—	—	—	132
1876	50	—	68	—	13	3	1	1	—	—	136
1877	50	—	7*	—	13	3	2†	1	61*	—	137
1878	50	—	7	—	13	3	2†	1	61	—	137
1879	Not Given										
1880	Not Given										
1881	61	—	22	—	13	6	2†	1	56	20	184a
1882	No Record										
1883	66	—	22	—	13	3	2†	—	56	20	182
1884	68	—	22	—	13	3	2†	—	56	19	183
1885	64	—	22	—	13	3	2†	—	56	18	178
1886	64	—	22	—	5	—	2†	—	56	18	167
1887	64	—	22	—	5	—	2†	—	55	18	166
1888	71	—	22	—	4	—	2†	2	54	18	173
1889	73	—	22	—	—	—	1	2	54	18	170
1890	73	—	22	—	—	—	1	2	54	18	170
1891	73	—	22	—	—	—	1	3	54	18	171
1892	81	—	22	—	—	—	1	3	54	—	161
1893	81	—	21	—	—	—	1	3	57	—	163
1894	81	—	21	—	—	—	1	3	57	—	163
1895	81	—	21	—	—	—	1	3	57	—	163

#### NOTES

\* Evidently until 1877 flat cars and gondolas were both carried in records as flat cars.

† Including one derrick car.

a Includes three refrigerator cars disposition of which is not given.

## CAMDEN AND ATLANTIC RAILROAD

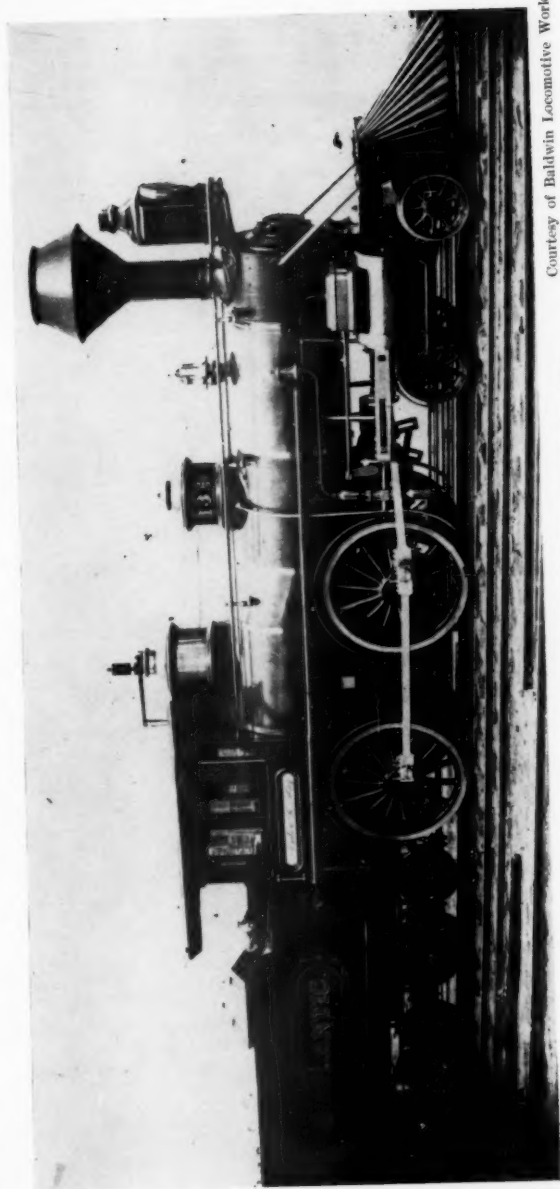
### ANNUAL NOTES ON PASSENGER AND FREIGHT EQUIPMENT

1870—Two passenger cars rebuilt and five overhauled. Eight second class cars and two baggage cars need repairs.

Thirty-two freight cars in need of repairs. Superintendent recommends in his annual report that an eight wheel flat car be built for each four wheel flat scrapped, as larger cars better adapted to character of freight handled. Reports need for more cars to handle coal, gravel, wood, and marl.

- 1871—Eighteen passenger cars have been thoroughly repaired and repainted. Six second class cars in need of repairs. Ten passenger cars were purchased from Philadelphia, Wilmington, and Baltimore R. R. at cost of \$8400.  
Two eight wheel box cars, thirteen eight wheel flat cars, and one wreck car built in company shops at cost of \$8744. Eight freight cars in need of repair and twenty-one freight cars rebuilt.
- 1872—Two second class passenger cars purchased. Twenty passenger cars were thoroughly repaired and repainted. Eight second-class cars, two baggage cars, and one smoking car in need of repair. Two passenger cars rented from Williamstown R. R. for summer service. During the summer two parlor cars were received on contract from the Woodruff Sleeping and Parlor Coach Company and were run from early in July until late in September. They proved advantageous to both companies.  
Five eight wheel box cars and six eight wheel flat cars rebuilt. Nine freight cars in need of repair.
- 1873—Eight new first class passenger cars purchased at a cost of \$43,000. Three second class cars and two baggage cars need general repairs. Four parlor cars owned by Woodruff Company operated during summer.  
Thirteen eight wheel freight cars built in company shops at a cost of \$11,947. Two eight wheel flat cars and two eight wheel timber cars rebuilt. Eleven freight cars need repairs.
- 1874—New baggage car built in company shops at cost of \$1495. Two old passenger cars rebuilt with baggage room in one end and are now used on freight trains for accomodation of passengers traveling by those trains. Six second-class passenger cars, two baggage cars, and one smoking car need repairs.  
Six new lime cars built and two lime cars, one timber truck, and two box cars rebuilt.
- 1875—Two baggage cars were condemned, one being converted to a freight car and the other used as a caboose for gravel trains. Three new baggage cars being built for use as freight cars in winter and baggage cars in summer.  
Six new flat cars built. \$5225 was spent for purchase of four horse cars and mules for the South Atlantic City Branch.
- 1876—In anticipation of greatly increased business during the year of the Centennial Exposition in Philadelphia eight first-class passenger cars, costing \$33,600, and three baggage cars, costing \$3460, were added to equipment. The management thought that visitors to the Exposition would undoubtedly want to take the trip to Atlantic City to enjoy the ocean but their optimism proved erroneous and additional equipment purchased was in excess of requirements.  
Smoking car No. 4, being unfit for service, was broken up in the fall and car of the dummy engine 'Little Giant' was rebuilt into a combination passenger and baggage car. Ten second-class passenger cars were repaired and overhauled. Four horse cars and fourteen mules were purchased for \$3270 to provide increased trolley service for the South Atlantic City Branch.
- 1877—One third-class passenger car was rebuilt into a combination car. A four wheel derrick car was built and three gondolas converted to flat cars.
- 1878—A combined smoking-baggage-mail car was built in company shops at a cost of \$3942. The company shops at Cooper's Point were re-equipped so that passenger cars could be built and better work done on cars of all types. Air brakes were installed on thirty-one passenger cars at a cost of \$4588.
- 1879—All passenger rolling stock now equipped with Westinghouse Air Brake. One half of passenger cars equipped with Miller Platforms and Bumpers.
- 1880—Nine passenger cars and one combination car purchased from the New York Central and Hudson River R. R. All passenger cars were equipped with Miller Bumpers.  
Twenty four wheel dump cars purchased to carry gravel, lime, etc.
- 1881—Five parlor cars owned by Woodruff Company operated during summer season. Air brakes installed on the nine passenger cars purchased from the N. Y. C. & H. R. R. R., at a cost of \$1242.  
The following equipment was built in the company shops—twelve box cars costing \$8600, one refrigerator car costing \$1497, and ten flat cars costing \$4847. Two dump cars were purchased at a cost of \$550.

- 1883—Color of passenger cars changed to a dark red.
- 1884—Two combined cars were scrapped, while thirteen passenger cars and three combined cars were reconditioned in company shops. Two combined passenger cars and two box cars were purchased from the Pennsylvania Railroad.
- 1885—Fourteen old passenger cars unfit for further service were sold. Four box cars were fitted up as baggage cars and two combination cars were condemned and destroyed. One gondola was rebuilt at Altoona by the Pennsylvania R. R., and one box car was purchased from that road to replace a condemned car. During the year a number of cars and locomotives of the West Jersey Railroad were repaired at Cooper's Point shops.
- 1886—Six old passenger cars were condemned as unfit for service and torn apart. Three class B passenger cars purchased from the Pennsylvania R. R. to replace two passenger cars destroyed and one sold to the Wicomico and Pocomoke R. R. Eight four wheel lime cars and three timber cars condemned and torn apart.
- 1887—One Class C passenger car purchased from the Pennsylvania R. R. to take the place of one car scrapped. Three new horse cars for Atlantic City trolley service built at Cooper's Point shop at a cost of \$1124.
- 1888—Three class B passenger cars purchased from the Pennsylvania R. R. to take the place of two cars sold and two cars converted to cabooses. Four new motor cars and three street cars purchased for South Atlantic City Branch. Seven new box cars, built at Altoona shops, purchased from the Pennsylvania R. R. Cooper's Point engine and car shops were abandoned and arrangements made with the Pennsylvania R. R. to have all repairs and renewals of rolling stock done at their Pavonia Shops which have been newly built.
- 1889—Six new parlor cars were purchased to replace cars returned to the Woodruff Co. on account of expiration of the contract for their use. Two new open street cars were built, one open air street car purchased from the West Jersey R. R., and five enclosed Atlantic City street cars rebuilt. Three new standard box cars and two new standard gondolas built at Altoona were purchased from the Pennsylvania R. R. and the old four wheel derrick car was sold to that road. One box car, two gondolas, and four lime cars were scrapped.
- 1890—Seven new standard passenger cars and one new baggage car were bought from the Pennsylvania R. R. Seven old passenger cars were sold and one combined car converted to a baggage-mail car. For the South Atlantic City branch twelve long open street cars and two electric motors were built, and one short open street car purchased to replace car torn apart. Two standard flat cars were purchased from the Pennsylvania and one box car and two flat cars were torn down.
- 1891—Four new standard passenger cars and one baggage car were purchased from the Pennsylvania R. R. One combination car was converted into a baggage car. For the South Atlantic City branch two new electric motor cars were built and three street cars purchased from the Philadelphia Traction Co. Four standard box cars and one standard gondola were purchased from the Pennsylvania to replace cars scrapped.
- 1892—Three standard class PG passenger cars were purchased from the Pennsylvania and two street cars were obtained from the West End Street Railway of Boston. One baggage car was wrecked and one passenger car scrapped. Ten new standard box cars were purchased from the Pennsylvania R. R., eighteen four wheel dump cars were sold, and two box cars torn up.
- 1893—Two new standard PG passenger cars, one new baggage car, and one new baggage-mail car were purchased from the Pennsylvania. One baggage-mail car was converted to a baggage car and two passenger cars and one baggage car were scrapped. Four new open street cars were bought for the Atlantic City Trolley line. Four new long gondolas have been obtained from the Pennsylvania and one gondola and one flat car torn up.
- 1894—Three new standard class PG coaches and ten second-hand class PB passenger cars were purchased from the Pennsylvania R. R. to replace thirteen old passenger cars scrapped. One street car was sold to the West Jersey R. R. and a second hand street car purchased from the United Columbian Electric Co.



Courtesy of Baldwin Locomotive Works

C & A #13, "Andrew K. Hay," Baldwin #3853, March, 1876.



Two new standard box cars, one new long gondola, and one new cabin car bought from the Pennsylvania to replace cars torn down. The old tool car was torn down and replaced by an electric construction and repair car built at the Camden shops of the Pennsylvania Railroad.

1895—Two passenger cars, one combination, and four baggage-express cars were purchased from the Pennsylvania. Two passenger cars, one combination, four baggage cars, and two street cars were scrapped. For the Atlantic City trolley service two open motor cars were purchased from J. G. Brill Co. Four street cars sold to the West Jersey R. R. were replaced by three new open motor cars and one combined motor car also obtained from Brill.

Three standard box cars purchased from the Pennsylvania to replace similar cars scrapped. One cabin car was torn down and replaced by an old passenger car.

## **The Tom Thumb**

### **Little Known Facts About First Locomotive Built In America Slowly Come To Light**

By LAWRENCE W. SAGLE

It has been definitely accepted by railroad historians that the Tom Thumb, built by Peter Cooper, New York manufacturer and philanthropist, was the first practical steam locomotive constructed on the American continent. (See Note 1) But, beyond that, very little is actually known about it. How big was it? What did it weigh? What was its shape and mechanical feature? These and other questions have been asked a great many times and the answers have been more or less unsatisfactory to the historian.

Probably the most widely accepted version or conception of the Tom Thumb, and most advertised, is the so-called operating replica in the possession of the B & O R. R. This replica was constructed for use in the Pageant of Locomotives at the Fair of the Iron Horse in 1927 and has been extensively used in many railroad pageants and exhibitions since that time. It is natural, then, that this locomotive should come to be accepted as a true copy of the original locomotive.

The question that naturally follows is: Where did the B & O obtain the information from which to build its operating replica? We find the answer to that, not in 1927 but in 1893. At that time, Major Joseph G. Pangborn, special representative of the B & O RR., was building and collecting one of the finest historical railroad exhibits ever assembled—the B & O exhibit at the Chicago World's Fair of 1893. He called it "The World's Railway; its Conception, Inception and Perfection; its Motive Power, Equipment and Appliances." A grandiloquent title, that, for an exhibition, but characteristic of the times. The New York World, in its issue of January 8, 1893, devoted six solid columns to a description of the elaborate plans being laid and the intensive research to obtain exact data and drawings of early locomotives here and abroad. The Major, with his chief of construction, William G. O'Brien, had made an extended tour of Europe the previous year, and presumably every authority had been consulted on both sides of the Atlantic. The result was, (among the many other exhibits) the famous Pangborn full size wooden models of early types of motive power, beginning with "Newton's Idea", of 1680 on down to a Winans Camelback of 1848. These models included, among other, Brunton's Steam Horse of 1813, Stephenson's Rocket of 1829, and other famous locomotives like the Mercury of 1830, Phoenix of 1831, Sandusky of 1837 and Campbell of 1837. And included in this group was a supposedly full size model of the Tom Thumb. It is difficult to believe, after all of these intervening years, that Major Pangborn and his helpers could have made an error in the general design of this locomotive. It may have been another case of being so close to the forest he couldn't see the trees. The Tom Thumb was built in Baltimore, and whatever information there was to be had must have been close to hand.

Twenty years before Major Pangborn began his stupendous under-



taking, a book titled "The History of the First Locomotives in America," written by William H. Brown, had been published. Mr. Brown corresponded with and published, in his book, some letters which he received from Peter Cooper and Benjamin H. Latrobe. The latter quoted from correspondence he had had with Ross Winans, in whose shop the locomotive had been constructed. Mr. Winans, like all others who had seen the locomotive, stressed its smallness. Latrobe, in his letter of November 20, 1869, addressed to W. H. Brown, who published it in full in his book, has this to say:

"I have now seen Mr. Winans, and shown him the rough sketch of the Peter Cooper locomotive, referred to in my former letter. I send, upon the next page, a copy of the sketch, which presents as near an approach to a picture of the machine as at this distant day is possible to exhibit. Mr. Ross Winans tells me that Mr. Cooper brought the boiler from New York, in the spring or early in the summer of 1829; and it was on a frame, and rested on four wheels belonging to the company; the road was then used thirteen miles to Ellicott's Mills, and with horse-power. The boiler was tubular, and upright in position. Mr. Winans does not recollect the dimensions of it, although he says it lay in his shops for several years. He thinks it was not more than twenty inches in diameter, and, perhaps, from five to six feet high. There was a single cylinder of three and one-quarter inches in diameter, fourteen and one-quarter inches stroke, that projects its piston rod and connecting-rod, so as to take hold of the crank by direct action.

"On the crank-shaft, which rested on the frame of the car, was a spur-wheel geared with a pinion on the forward road-wheels so as to increase speed; the road-wheels being only two and one-half feet in diameter.

"The fuel was anthracite coal, and an artificial draught, in the fire-box at the bottom of the boiler, was created by a fan, driven by a belt passing around a wooden drum attached to one of the road-wheels, and a pulley on the fan-shaft as shown in the sketch.

"Mr. Winans says that Mr. Cooper at first proposed to communicate the reciprocating motion of the piston-rod to the road wheels by an arrangement which I cannot accurately describe, but the experiment did not satisfy Mr. Cooper on trial, and the common crank action was substituted, and the favorable results obtained, which are described in Mr. Winans's letter of August 28, 1830, published in the Railroad Record of Cincinnati, on the 8th of July last. Mr. Cooper, if applied to, could perhaps furnish some interesting additional particulars about this engine, which was undoubtedly the very first American locomotive.

"Mr. Winans, after examining the sketch, pronounces it substantially correct as to the general features of the engine; the details, many of course ideal, must be very defective. The number, size, and length of the tubes are not known, only their position in the boiler.

"The road-wheels were two and a half feet in diameter; the axles had outside bearings upon Winans's friction wheels. The axle on which the pinion was fixed was kept from lateral or longitudinal movement, so as to preserve its position with respect to the spur-wheel."

Not content with this, Brown made inquiries, about the locomotive, to its builder, Peter Cooper himself. In a letter to Brown dated May 18, 1869, Cooper had this to say:

"In reply to your kind favor of the 10th inst., I write to say that I am not sure that I have a drawing or sketch of the little locomotive placed by me on the Baltimore and Ohio Railroad, in the summer of 1829, to the best of my recollection.

"The engine was a very small and insignificant affair. It was made at a time when I had become the owner of all the land now belonging to the Canton

Company, the value of which, I believe, depended almost entirely upon the success of the Baltimore and Ohio Railroad.

"At that time an opinion had become prevalent that the road was ruined for steam locomotives, by reason of the short curves found necessary to get around the various points of rocks found in their course. Under these discouraging circumstances many of the principal stockholders were about abandoning the work, and were only prevented from forfeiting their stock by my persuading them that a locomotive could be so made as to pass successfully around the short curves then found in the road, which only extended thirteen miles, to Ellicott's Mills.

"When I had completed the engine, I invited the directors to witness an experiment. Some thirty-six persons entered one of the passenger-cars, and four rode on the locomotive, which carried its own fuel and water; and made the first passage, of thirteen miles, over an average ascending grade of eighteen feet to the mile, in one hour and twelve minutes. We made the return-trip in fifty-seven minutes.

"I regret my inability to make such a sketch of the engine as I would be willing to send you at this moment, without further time to do so."

Nearly forty years had passed since the building of the tiny locomotive, and Alderman Cooper had reached the ripe old age of 78. Therefore we can forgive his lapse of memory about this which was but one of many experiments during his long and exceptionally active life.

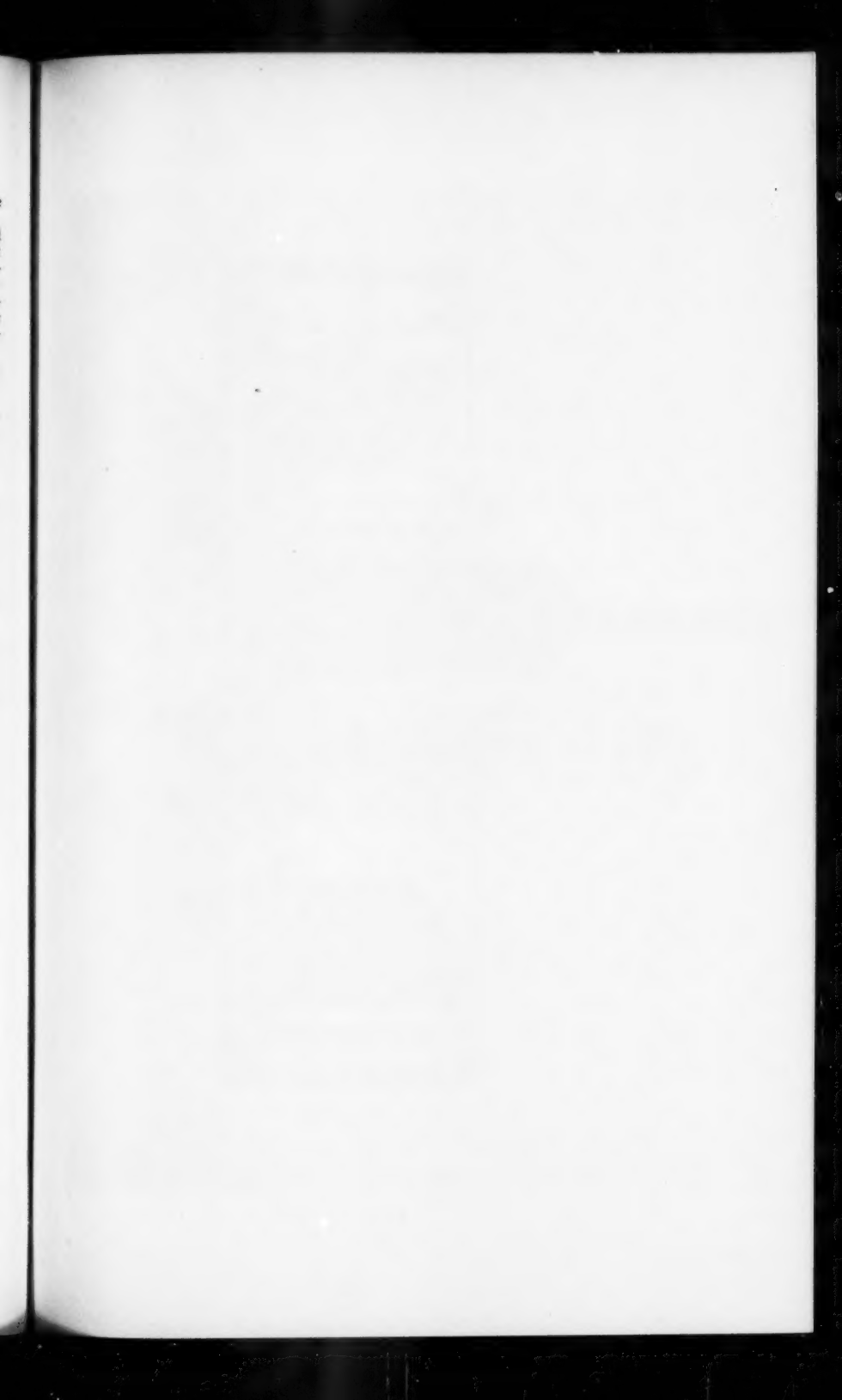
This information was available, as we have said, to Major Pangborn, and when you compare the model he constructed with the drawing in Brown's book, you wonder why he made his higher, and why he introduced a 5" x 27" cylinder in place of the 3¼" x 14¼" cylinder on the original. We can understand why the larger cylinder would be used on the operating replica, because it would make for better operation, and for that reason it would not be such a great crime to "steal a little" here and there.

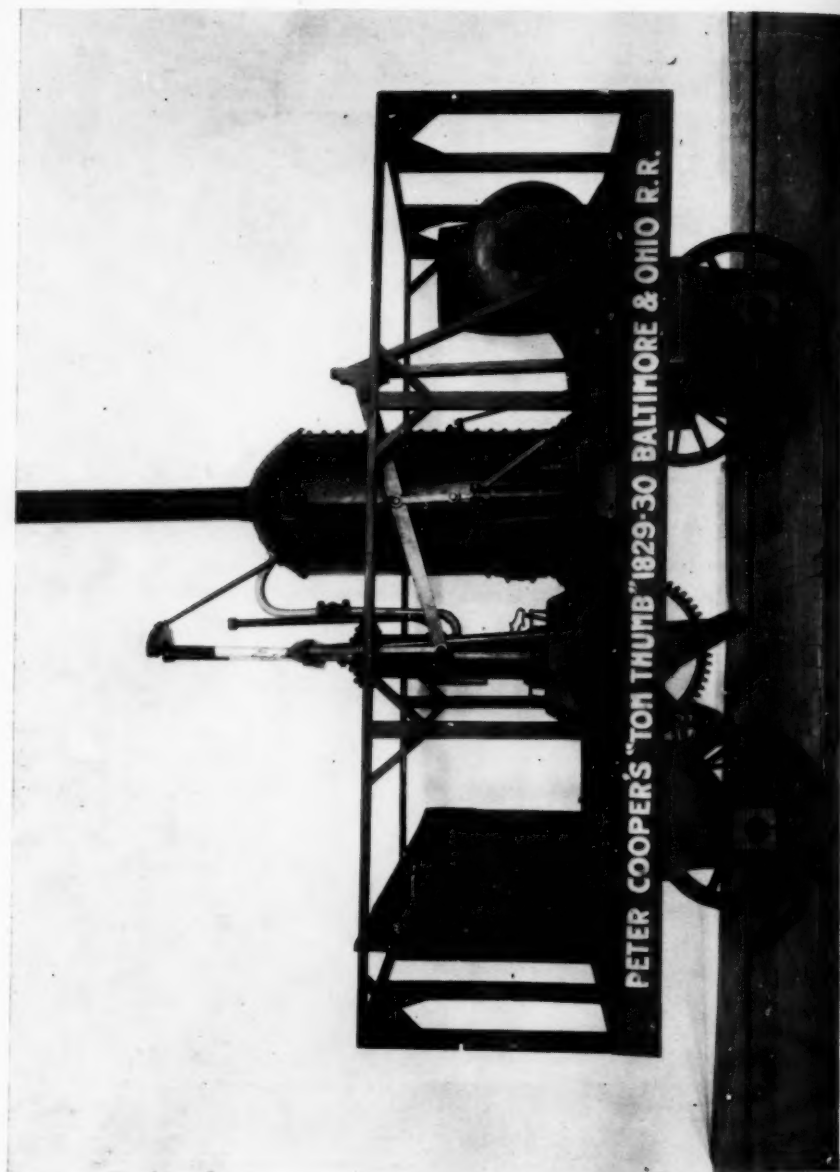
The writer, by measuring and scaling the photographs and drawings, offers dimensions and comparisons of the three. The column designated "original locomotive" is based on the drawings in Brown's book, mentioned previously, and in Snowden Bell's "The Early Motive Power of the Baltimore and Ohio Railroad."

	Original Pangborn Locomotive Model		Operating Replica
	21 in.	27 in.	27 in.
Diameter of Boiler			
Height of Boiler (Including Firebox)	60 in.	66 in.	66 in.
Height of Top of Stack above the rail	10 ft.	12 ft.	12 ft. 9 in.
Length of Platform	13 ft.	14 ft. 6 in.	13 ft. 2¾ in.
Height of Platform above rail	15 in.	36 in.	36 in.
Cylinder Bore	3¼ in.	5 in.	5 in.
Cylinder Stroke	14¼ in.	27 in.	27 in.
Gear on axles	15 in.	21 in.	27 in.
Gear on crank	21 in.	30 in.	33 in.
Top of Cross-head bracket above rail	67 in.	120 in.	120 in.

(These figures are based on measurements of photographs and drawings, and not of measurements of the actual locomotives.)

From the foregoing, it will be noticed that the error in the design of the Pangborn Model is mainly in the size of the cylinder (every





The Peapack model of the "Tom Thumb."

Courtesy of Baltimore & Ohio R. R.

authority agrees on the  $3\frac{1}{4}$ " x  $14\frac{1}{4}$ " size) and in the height (although this is plainly guesswork). The writer can find no reference to the kind of valves or valve motion on the cylinder, nor of a water pump being used. Pangborn introduced a water pump on his model. The blower fans on the model and the operating replica are apparently much larger than the original, which was not on the platform, but *in the stack*.

The operating replica weighs about 5 tons, and H. B. Latrobe, in a lecture before the Maryland Institute, in 1868, states that the original engine was no bigger than a hand-car and could not have weighed a ton. However, the original was but an experimental locomotive, and the replica has been built of heavier and more durable materials, and, as before stated, parts have been made oversize and strengthened for safer and better operation.

We believe that Mr. Latrobe's address is sufficiently interesting to include a portion of it here. He said, in part:

"The machine was not larger than the hand-cars used by workmen to transfer themselves from place to place; and, as the speaker now recalls its appearance, the only wonder is, that so apparently insignificant a contrivance could ever have been regarded as competent to the smallest results. But Mr. Cooper was wiser than many of the wisest around him. His engine could not have weighed a ton, but he saw in it a principle which the forty-ton engines of to-day have but served to develop and demonstrate.

"The boiler of Mr. Cooper's engine was not as large as the kitchen boiler attached to many a range in modern mansions; it was of about the same diameter, but not much more than half as high. It stood upright in the car, and was filled above the furnace, which occupied the lower section, with vertical tubes. The cylinder was but three and a half inches in diameter, and speed gotten up by gearing. No natural draught could have been sufficient to keep up steam in so small a boiler; and Mr. Cooper used, therefore, a blowing-apparatus, driven by a drum attached to one of the car-wheels, over which passed a cord that in its turn worked a pulley on the shaft of the blower. Among the first buildings erected at Mount Clare was a large car-house, in which railroad-tracks were laid at right angles with the road-track, communicating with the latter by a turn-table, a liliputian affair indeed compared with the revolving platforms, its successors, now in use.

"In this car-shop, Mr. Cooper had his engine, and here steam was first raised; and it seems as though it were within the last week that the speaker saw Mr. George Brown, the treasurer of the company, one of our most estimable citizens, his father, Mr. Alexander Brown, Mr. Philip E. Thomas, and one or two more, watch Mr. Cooper, as with his own hands he opened the throttle, admitted the steam into the cylinder, and saw the crank-substitute operate successfully with a clacking noise, while the machine moved slowly forward with some of the by-standers, who had stepped upon it. And this was the first locomotive for railroad purposes ever built in America; and this was the first transportation of persons by steam that had ever taken place on this side of the Atlantic, on an American-built locomotive."

Many people have wondered what Mr. Latrobe meant when, in speaking of the early demonstration in the car shop, he mentioned the "crank-substitute." We will let Alderman Cooper tell you about it. Perhaps after he had received the inquiry from Brown in 1869, he had refreshed his memory concerning his locomotive. It was in the year 1875, and Mr. Cooper was called upon to address a meeting of the Master Mechanics Association, which, later combining with the Master Car Builders Association, became the Mechanical Section, Association of American Rail-

roads. We quote that part of Mr. Cooper's speech having to do with the Tom Thumb:

"A gentleman has just asked me to say something about a very little, insignificant locomotive which I made, I think, in the year, 1829. You will see how insignificant it was when I tell you that the cylinder was only three inches in diameter, with a four-inch stroke. It seemed presumptuous to suppose that such an engine could do anything on a railroad, and particularly on a road where there was a grade of eighteen feet to the mile, and curves of only two hundred and fifty or three hundred feet radius. I had been drawn into speculation in Baltimore about that time, with two men who represented that they had very large means. We bought together three thousand acres of land, extending some three miles on the north side of the harbor at Baltimore. After I had been in partnership with them but a very little while, and had paid my portion of the purchase money (we bought the whole tract for one hundred and five thousand dollars), I found that I had paid my part while they had paid nothing, and that I was even then paying their board bills. They proved to be irresponsible men. What to do was the question. I insisted at once that they must either pay up or sell out. I was willing to buy or sell, whichever they chose. They could not buy, and so, after a good deal of bargaining, one man was induced to take ten thousand dollars for his share, and I paid it to him at once. The other, after a while, agreed to go out for a little less. After purchasing their interests I had an elephant on my hands, and the question was what I should do with it. I had to leave my business here while attending to this business in Baltimore. When the Baltimore & Ohio Railroad Company started, it started under very high expectations of fortune to all who were interested in it. I remember that Mr. Patterson told me that they then thought that the road would be so prodigal in its returns that they could afford to make the rails of silver. That was a very extravagant idea, to be sure, but that is what he said. Instead, however, of accomplishing such a result, they found at the end of one year that they had spent their first five per cent, of capital, and had demonstrated the fact that they must change the location of their road, in order to avoid the very short turns which they had at first adopted to save expense. They had learned from their own experience, as well as from the opinions of competent engineers from England, that no road could be successfully run with locomotives on which there were curves of less than three hundred feet radius, and on that road they then had curves of one hundred and fifty to two hundred feet radius. There were a number of short curves of that kind. The Company were plunged into despair, and the principal stockholders determined that they would no longer pay up the assessment on their stock. In the abandonment of that road I saw the defeat of my enterprise. It would have been a terrible defeat to me, for I saw that the growth of the city of Baltimore depended upon the success of that road, and I had purchased that tract with a view of taking advantage of the rapid growth of the city which was anticipated. I saw that my land was likely to remain for a great while before it could be of use, simply because they could not use the locomotives they then had on the road as they had constructed them. (See Note 2) I said to the President and a few of the Directors who were principally interested that, if they would hold on, and not sacrifice their stock for a little while, I would put a small locomotive on which, I thought, could pull a train around those short curves. So I got up a little locomotive. I happened to have an engine in my factory, which I took on to Baltimore, and with some old wheels that I got at the railroad shops, I rigged up a temporary locomotive, and I think it was about as temporary as any you ever saw. When I got ready for an experiment I invited the President and Directors to go out on it. The engine was a new construction altogether. It was a peculiar kind of an engine, which I had gotten up for experiment and for the purpose of demonstrating a fact which is, perhaps, worth noticing—and I think the day will come when the principle embodied in that engine will be successfully demonstrated as correct. I got the idea that there was a great loss of power in getting a rotary motion through a crank, and I saw the way to get clear of it. I described the method as well as I could to a young engineer of the Sterling Iron

Works (this was more than fifty years ago), and he seemed to understand how to do it. I agreed with him to get me up a little engine, and he did so. When it was done he notified me that it was ready for experiment. I went down to Baltimore to try the experiment, and I got permission to attach it to the boiler of an engine three times the size of mine. They were boring a steam cylinder with it, and doing nothing else. One dropped the work and the other took it up, while the safety valve was balanced exactly, and it did not take two minutes to perform the operation. To the astonishment of all who saw it, the little engine did the work. I remember the remarks of an English engineer who was there at the time. He looked at it with astonishment, and then said: 'If any man had told me that that engine would do that work, I would have told him that he knew nothing about mechanics. I now see that we will yet cross the Ocean in six days.' That was fifty years ago, and we have come pretty near his prediction. To give you an idea of how the locomotive looked, I will describe it in a few words. Just imagine a steam cylinder, with a piston rod going entirely through it. Imagine a chain at each end connected with the piston rod, and the chain passing around a wheel at the top, and another wheel at the bottom. With the piston rod this made the chain endless. Then imagine the chain bolted to the top and bottom wheels. Then I put a chain upon the other two wheels, and crossed the chains so that one was loose at the top and the other fast at the bottom. When the engine made its stroke it made alternate motions. There was a catch that caught on the edge of the flange. These catches were borne up by a spring behind them, and as it made this motion one way the catch was perfectly free to slip, and the instant it stopped the other was ready to take it up and carry it on. In this way the rotary motion was kept up about as perfectly as you can imagine. It worked well until the edge of the cogs began to wear, and the hard strain caused it to slip. That discouraged me from making a larger one. I got it all ready to run, and had a temporary track in the shop on which I could run it backward and forward by way of experiment. While I was away for a little while, after I had got it all ready to go on the road, somebody ran it backward and forward on this temporary track, and not understanding the operation, ran it so hard that they broke a piece out of one of the wheels. It was a good deal of trouble to get another; but I did get another, and put it on, got it into the railroad house, and got up steam over night, ready to make a start in the morning. The President and two other gentlemen stepped on the locomotive, and we went out a little way and came back. I felt confident that the next day we would go out with it and have a fair trial. The next day came, but again something had happened to my locomotive. They had been running it backward and forward again, and had broken another piece out of my wheel. So I was delayed until I could get another one made. I had another one made. I was standing by the man watching him as he was finishing it off, and thought we would soon be ready for a start; but, as bad luck would have it, when he was putting the last touches upon it, it slipped out of his hand and broke another piece off. Thought I, the fates are against me. I took that same little cylinder, put it on a cross head with a bottom bar, piston rod, and a couple of little shackle bars, with a crank and a cog wheel, and put the locomotive on the road. When I got all ready I invited the Directors to come and witness the experiment. Just then another little accident happened that I must tell you about. Some good-for-nothing fellow had run off with the copper pipes just for the old copper. I got them fixed, and again invited the Directors to come and witness the start. That time I succeeded in getting off. I got thirty-six persons in one car and hooked on to it. The locomotive carried six men, besides its own fuel and water. You would think that so small a cylinder would not be able to do the work, and the boiler was only about as big as a flour barrel. It was a tubular boiler, with iron gun barrels for the tubes! I feared that I would not be able to get steam enough out of that boiler, and so I attached a blower such as you never saw, I guess. I screwed a crooked joint on the top of the smoke stack to hold my blower, and carried a belt down over a wheel on the shaft, and so I got up speed enough to run it. I found that I had sufficient power to draw the shavings right through the boiler. I put my blower on and got up the steam. I set my safety valve at the amount of steam I wished to carry, but I found that the steam blew off too fast. The safety valves



would discharge the steam so rapidly that I thought all of the water would go out of the boiler. I could not conveniently alter the safety valves, and I knew that the boiler was strong, so I put my hand on them and held them down. Insignificant as that little engine was, we made the trip of thirteen miles in an hour and twelve minutes, making all the short turns, and demonstrated the fact that a locomotive could be made which could go around those short curves, the thing that I set out to do. We had it down hill in coming back, and made the run in fifty-seven minutes. Some four years ago I met Mr. Latrobe, then the counsel for that road, at Newport, and he asked me if I had received a pamphlet from him. I told him that I believe not. Said he: 'Then I will send you one. I was one of your passengers on that trip to Ellicott's Mills, and took particular note of everything that transpired, and of every mile we traveled, and of the minutes and seconds we were in doing it.' He said that he had been delivering an address before an assembly in Baltimore, and had taken the opportunity to describe this trial trip. He sent me the address, and it gave me information which I was not aware existed. I believe that that little engine, simple as it was, had a good deal to do in stimulating the people to go on with that railroad, which is now such an honor to the country through which it passes, and in which the whole country may well feel a just pride."

Notice that Mr. Cooper states that the cylinder was but 3 inches in diameter, with a four inch stroke. Eye witnesses, writing much earlier agree on the  $3\frac{1}{4}$ " x  $14\frac{1}{4}$ " cylinder. Perhaps the stenographer who made the notes of Mr. Cooper's speech heard "four" while he may have said "fourteen." Remember that Cooper was then 84 years old, and it was 46 years after the event. But for all of that, his memory seemed exceptionally good and his mind keen, which we can gather from other references made in this and other portions of his address.

We are specially intrigued by the mention made of the chain drive. It certainly would never have stopped on "dead center," an onery habit the operating replica has. Also notice that he said the boiler was no bigger than a flour barrel, and that the blower was in the stack. Otherwise, the B & O operating replica is not far off—a good guess, if it was a guess on the part of Major Pangborn's advisors.

And, if Alderman Cooper had not spent so much time on the wheel and chain drive, but had rigged up a crank and pinion in the first place, perhaps it would not only have been the first American-built locomotive, but also the very first to operate on an American railroad, beating the "Stourbridge Lion" to that honor.

#### NOTE 1:

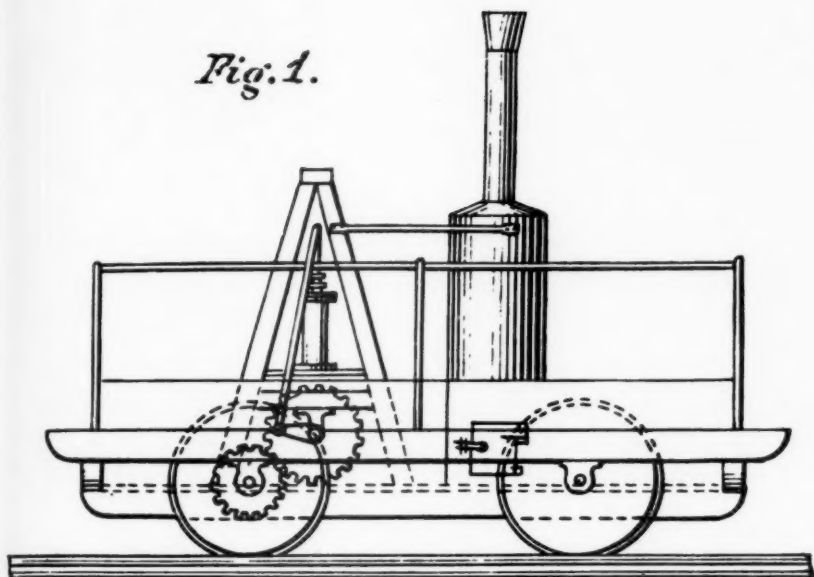
Actually, the Tom Thumb was not the *first locomotive* built in America. The little locomotive built by Col. John Stevens at Hoboken, N. J., and exhibited in public demonstrations on his estate in Castle Point, Hoboken, in 1825, may claim this honor. However, it is doubtful if this locomotive could have pulled any load on any real railroad, nor would its builder have had the temerity to engage his engine in a race with a "spirited gray." The wheels were not flanged, and ran on wide flat rails. A vertical bar, at each corner, projected downward from the frame, bearing on the inside of the wooden rails, kept it on the track. Such a device would never have operated through switches or cross-overs.

#### NOTE 2:

Mr. Cooper's memory probably failed him at this point. Prior to the trial of the Tom Thumb, the B & O used horses, exclusively, for motive power. (The sail car was not successful.) After the Tom Thumb demonstrated that the steam engine would operate successfully on the sharp curves of the line, the Company, on Jan. 4, 1831, advertised that it would pay four thousand dollars as first award and three thousand as second prize for locomotives that would meet certain require-

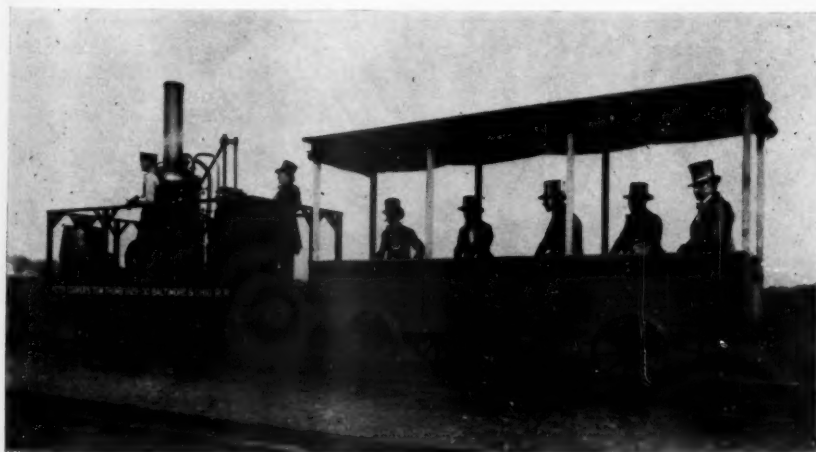


*Fig. 1.*



Courtesy of Baltimore & Ohio R. R.

The cut of the "Tom Thumb" appearing in Brown's and Bell's books.



Courtesy of Baltimore & Ohio R. R.

The "Tom Thumb" and car at the "Fair of the Iron Horse"—1927.

n  
e

h  
7

V  
e  
ti  
re  
th  
fo

st  
w  
ti  
st  
lo  
w  
18  
to

fo  
on  
No  
the  
Cu  
22

the  
tac

ments. The "York" locomotive, the first locomotive to go into actual service on the B & O, June 1, 1831, was the winner of the first prize. The other three locomotives entered failed to meet the requirements.

**EDITOR'S COMMENT:** In all fairness to the author of this article, the list of locomotives that was appended to his article in our Bulletin No. 70 was furnished by your Editor, not by the author.

The list was intended merely to serve the purpose of where the Ross Winans engines were in service. It was in no sense a builder's list because the records have probably been destroyed long ago. The information was taken from the annual reports of the railroad companies without regard to their predecessors. Had you turned to any of the reports of these companies, after the engines had been delivered, you would have found these Winans' engines listed.

However, Mr. Norman Perrin of Baltimore, Md., has made a closer study of some portions of the roster. Since the Northern Central Railway did not come into being until January 1, 1855 and was a consolidation of several roads, the Winans' engines built prior to 1855 were constructed for the Baltimore & Susquehanna R. R. Furthermore, the locomotives "R. M. Magraw," "Daniel Webster" and "John S. Gittings" were constructed or delivered in 1851 and Nos. 10 and 11 were built in 1853. Finally, N. C. Nos. 27-32 and the five subsequent engines delivered to the Pennsylvania R. R. were all constructed in 1856.

Two other engines deserve mention. In the Northern Central Report for 1869, Nos. 97 and 98 were built by Ross Winans and placed in service on the N. C. in 1867. They were built for some road acquired by the Northern Central, we do not know which one and the date is the year the engines were acquired, not built. Subsequently, they were sold to the Cumberland & Pennsylvania R. R. where they were assigned Nos. 23 and 22 respectively.

Your Editor appreciates these corrections from Mr. Perrin and, at the same time he wishes to remove any blame that might have been attached to Mr. Sagle since he did not furnish this roster.

**A HISTORICAL SKETCH OF**  
**The Baltimore & Ohio Chicago Terminal Railroad**  
**Company And Its Predecessor Companies**

*Presented Before The*  
**RAILWAY & LOCOMOTIVE HISTORICAL SOCIETY**  
**CHICAGO CHAPTER**

**APRIL 11, 1947**

By G. M. CAMPBELL

The Baltimore & Ohio Chicago Terminal Railroad is an outgrowth of numerous earlier corporations, and had its inception in February, 1867, when the LaSalle & Chicago Railroad Company was chartered to build a line west from a point between Harrison and Polk Streets, Chicago, through LaSalle and Ottawa. An ordinance was secured from the City of Chicago in 1872 to construct to the city limits, but no right of way was procured and no construction was undertaken.

The Chicago & Great Western Railroad Company, organized in January, 1873, acquired the rights and succeeded the LaSalle & Chicago Railroad. Feebly the Chicago & Great Western made several attempts to push construction, but little was accomplished by this new company until 1885, when interests supporting the extension of the Wisconsin Central Railroad into Chicago acquired control in that year and secured a new ordinance from the City of Chicago. The Wisconsin Central (now operated by the Soo Line) was making plans to extend north to St. Paul, Duluth and Ashland, and south to Chicago. The Chicago & Wisconsin Railroad was organized and in that name acquired right of way from Forest Park, Ill. to the Illinois-Wisconsin State Line. In order to provide connection at Central Avenue, the Chicago & Great Western, in 1885, promptly built a line from Polk Street, Chicago, across the Chicago River, to Harlem Avenue. Thus the ancestral stem of the present Baltimore & Ohio Chicago Terminal Railroad was formed, later to be expanded with the construction of the Chicago Central Railroad, to form the line south to Blue Island, and the acquisition of the Chicago & Calumet Terminal Railroad, extending from Pine Junction, as well as Whiting, to McCook.

The similarity of the name Chicago & Great Western Railroad should not be confused with the present Chicago Great Western Railway—then building under the name of the Minnesota & Northwestern Railroad, later to be known as the Chicago, St. Paul & Kansas City, before it became the Chicago Great Western. The Minnesota & Northwestern Railroad was itself striving to reach Chicago and sought connection with the Chicago & Great Western. The Chicago & Great Western Railroad deeded its westernmost two miles from Central Avenue to Harlem Avenue to the Chicago & Wisconsin Railroad, and the Chicago & Wisconsin in turn leased these two miles back to the Chicago and Great Western, along with about three miles of the Chicago & Wisconsin from Harlem Avenue

to Madison Street in Forest Park. The Minnesota & Northwestern then provided its entrance from Forest Park into Chicago by a lease with the Chicago & Great Western, and likewise the Chicago & Wisconsin entered Chicago from Forest Park via the C. & G. W. A temporary passenger station was built at Wells Street (then Fifth Avenue) and Polk Street in 1888, and served until the opening of Grand Central Station on December 10, 1890.

This portrayal defines the present main line of the B. & O. C. T. west from Grand Central Station to connection with the present Chicago Great Western Railway at CGW Junction in Forest Park, and the Wisconsin Central Railroad at Madison Street, in Forest Park.

Great boon came to the Chicago & Great Western Railroad when Mr. Henry Villard, one of the early titans of railroad finance, acquired control of the Northern Pacific Railroad, becoming its President in 1881. His ambitions to bring the Northern Pacific into Chicago led to the lease of the Wisconsin Central Railroad. The next move was to acquire a secure Chicago entrance. He and his associates accordingly incorporated the Chicago and Northern Pacific Railroad in November, 1889, and acquired the Chicago and Great Western Railroad, and along with it in 1890 and 1891, four small struggling short lines in the Chicago area connecting with the Chicago and Great Western. These were the Chicago, Harlem & Batavia Railroad, the Bridgeport & South Chicago Railway, the Chicago Southwestern Railroad, and the Chicago Central Railroad. He bought land between Harrison and Polk Streets and west of Wells Street, and upon this—the site of a coal yard—he constructed the imposing Grand Central Station. It is interesting to note in this connection that a mortgage for \$650,000 was made to the City of Chicago School Board as part of the purchase price. These bonds were paid following the B. & O. C. T. purchase of the property.

Mr. Villard was not a man to do things half-way. His ambitions were to provide the most magnificent passenger station in Chicago for the Northern Pacific Railroad which could be created by a great architect using the finest materials. The true Norman architecture of Grand Central Station, with its imposing tower, attested to the splendor of the plans. More description of Grand Central Station as a passenger terminal and hotel will subsequently be given, but let us pass now to the detail of the four small connecting rail lines.

The Chicago, Harlem & Batavia Railroad was a suburban line, originally incorporated in May, 1879 as the Chicago & Western Dummy Railway Company. The Chicago, Harlem & Batavia Railway, incorporated in December, 1885, acquired the line in February, 1886. It extended north from the Chicago and Great Western Railroad at 40th Avenue (now Pulaski Road) for several city blocks to Randolph Street, thence west to a point slightly beyond what is now DesPlaines Avenue in Forest Park, and then south a few blocks to Concordia Cemetery in Forest Park, connecting again with the C. & G. W. It operated suburban passenger service as far as Thatcher's Park, just east of the DesPlaines River, by using the tracks of the Wisconsin Central north from Forest Park.

While the Chicago & Northern Pacific was going through its death throes, the Chicago, Harlem & Batavia, in May, 1896, was leased to the Suburban Railroad Company, and passenger operations were conducted to connect with the street car lines of the City at their terminals at Madison Street and what is now Pulaski Road. In 1900 the City of Chicago ordinance permitting operation of the C. H. & B lapsed, and the franchises of several communities through which it ran lapsed in 1901 and 1902. The tracks were torn up in 1903. The building of the Lake Street Elevated in November, 1893 spelled the doom of the C. H. & B.

The Bridgeport & South Chicago was incorporated in March, 1887, and organized by the Wisconsin Central interests that controlled the Chicago and Great Western Railroad. No construction was ever undertaken, but it aimed to reach the Chicago Stock Yards. It purchased right of way over which it proposed to operate from a connection with the Chicago & Great Western, near Ashland Avenue, to a connection with the C. B. & Q. at 22nd Street and Ashland Avenue, and purchased the Chicago South Branch Dock Company, which held title to dock property along the South Branch of the Chicago River near Ashland and Blue Island Avenue. Refusal of the Council of the City of Chicago to grant franchise rights killed the venture.

The Chicago & Southwestern Railroad was incorporated in July, 1890 by the Villard interests which controlled the Wisconsin Central Railroad at that time, and was acquired by the Chicago & Northern Pacific in October, 1891. It built a loop line leaving the Chicago & Northern Pacific (Chicago and Great Western) at 46th Avenue. After a southerly direction for a short distance, it turned west across 46th Avenue, into 16th Street, Cicero, following the bed of the street to Central Avenue, thence over private right of way to Harlem Avenue, where it turned north and followed Harlem Avenue to connection again with the Chicago & Northern Pacific main line. Passenger service was maintained to serve particularly the Harlem Race Track, near Harlem Avenue. Trains operated around the loop in each direction, as conditions warranted. The section beyond Central Avenue, in Cicero, was principally residential, so in later years, following the closing of the Race Track, operations ceased beyond Central Avenue to connection with the main line, and the line officially abandoned in February, 1922. An ordinance of December, 1898 granted by the Town of Cicero released the obligation to furnish passenger service, and during 1918 considerable of the westerly portion of the line was torn up. Operating rights in Harlem Avenue were leased to the Suburban Railroad, which operated an electric traction service in the Western suburbs of Chicago and from the Chicago Elevated at 52nd Avenue to LaGrange. In the building of the Chicago Central Railway, it became necessary to cross the Belt Railway of Chicago at 75th Street, and as a trade, to secure this, the Chicago and Southwestern Railroad granted perpetual rights to the Belt Railway of Chicago to serve industries along its line.

The Chicago Central Railway was incorporated in October, 1889, and was built by interests then in control of the Wisconsin Central. City ordinance for its construction was granted in July, 1891. It was acquired by the Chicago & Northern Pacific in October, 1891, as successor

to the Chicago and Great Western Railroad, and opened for traffic in April, 1892. The Chicago Central was built from a connection with the Chicago & Great Western Railroad at 14th Street and Western Avenue to Blue Island, where connection was made with the Chicago & Calumet Terminal Railroad. It thus gave the link between the Chicago & Great Western and the Chicago & Calumet Terminal to form what later, through consolidation, became the Chicago Terminal Transfer Railroad, and subsequently the Baltimore & Ohio Chicago Terminal Railroad.

Three short line railroads in the Calumet District were incorporated between July, 1886 and February, 1887, but undertook no construction. These were the Chicago Calumet Railway Company, the Calumet River Railway Company, and the Hammond & Lake Michigan Railway Company. Their franchises were consolidated in 1887 to form the Chicago & Calumet Terminal Railway Company, which was organized to develop industrial sites in the Calumet territory (East Chicago) by Jos. T. Torrance, then President of the Standard Steel Company, with the further objective of providing interchange service in the Chicago area. First was a connection at Whiting, Indiana, with the Baltimore and Ohio & Chicago Railroad, which reached Chicago in 1874 as an extension of the Baltimore & Ohio Railroad, and secondly, a connection with the Pittsburgh, Fort Wayne & Chicago Railroad (Pennsylvania Railroad) at Clark Junction, near the Lake Front. The line from Whiting and the line from Clark Junction met at East Chicago. The extent of the property and its aim is aptly described in its long term contract made with the Baltimore & Ohio & Chicago on February 26, 1890. This contract states that the Chicago & Calumet Terminal Railway Company, having franchises for construction of a belt railway from connection with the B. & O. & C. at Whiting, Ind. and the summit (McCook) between the towns of LaGrange, Ill. and Riverside, Ill., enters into agreement with the B. & O. & C. to operate over its tracks from Whiting to South Chicago and east from Whiting about  $1\frac{1}{2}$  miles, with rights of the Chicago and Calumet Terminal Railway to serve any intermediate sidings constructed or to be constructed. A team track was to be provided by the B. & O. & C. at South Chicago (92nd Street) for use by the C. & C. T. Railway until later the C. & C. T. should itself provide a facility. This the C. & C. T. nor its successor never did build. The Chicago & Calumet Terminal Railway agreed to transfer B. & O. & C. freight to connections at the lowest rates granted by any other railroad.

The original plans of the Chicago & Calumet Terminal Railway were to extend the line further north beyond McCook, but in lieu of undertaking this, it made a perpetual contract in October, 1906 with the Chicago, Hammond & Western Railroad (later to become successively the Chicago Junction Railroad and the Indiana Harbor Belt Railroad) providing that the C. H. & W. would build a line from McCook to Franklin Park. The Chicago & Calumet Terminal Railroad then entered into an operating arrangement whereby the C. H. & W. would operate over C. & C. T. from Blue Island to McCook, and the C. & C. T. would operate over the C. H. & W. from McCook to Franklin Park. This is the continuing and present basis of operation over this joint line, where each has equal rights, including service to sidings built or to be built.



That part of the Chicago & Calumet Terminal Railroad between Clark Junction and Calumet Park was single track. Parallel to it from Clark Junction to the Indiana-Illinois State Line was another single track line—the State Line & Indiana City Railroad, later to become the South Chicago and Southern Railroad. This was owned by the Pittsburgh, Fort Wayne & Chicago Railroad (P. R. R.) A contract was made in January, 1892, to operate these two parallel single track lines as a double track railroad; the C. & C. T. owning the South track and the State Line & Indiana City owning the North track. The C. & C. T., however, did reserve ownership on the north side for shops and round-house at the junction with the branch to Whiting. In addition to providing a line for joint use from Clark Junction to State Line, the joint line was leased in July, 1892 for trackage by the Wabash Railroad from Clark Junction to the State Line near Hammond, where the Wabash connected with the Chicago & Western Indiana to enter Chicago, and the C. & C. T. granted trackage rights to the S. C. & S. from State Line to Calumet Park. The C. & C. T. was extended a few hundred yards to Pine Junction for connection with the Lake Shore & Michigan Southern (New York Central), providing a route in December, 1903 for Pere Marquette trains to reach Grand Central Station.

It was the Chicago & Northern Pacific Railroad which built the branch line from Harvey Junction to Harvey. This in 1898 was extended by the Chicago Terminal Transfer Railroad to Chicago Heights. Daily passenger trains from Grand Central Station to Chicago Heights were instituted in May, 1900, and this service was continued until the First World War. Connection was made about two miles south of Chicago Heights with the Chicago, Terre Haute & Southeastern, built to tap the coal mines and the stone quarries in Indiana. The C. T. H. & S. E., under a long term lease, became part of the C. M. St. P. & P. in July, 1921, and then by lease with the B. & O. C. T. and the I. H. B., trackage rights were arranged to St. Paul Junction, near Blue Island, where trains for the yards of the Milwaukee Road at Bensenville, near Franklin Park, left B. & O. C. T. tracks to move over the now I. H. B. and the joint line from Blue Island to Franklin Park, but before this, in 1913 the C. T. H. & S. E. did operate its own trains over the then B. & O. C. T. to Blue Island.

The last appendage of the Chicago & Calumet Terminal Railroad was the Lyons & Chicago Railroad, incorporated to build a short spur from McCook to the quarries of the Chicago Crushed Stone Company. It extended from the extremity of the Chicago & Calumet Terminal Railroad, and is today subject to joint line use with the I. H. B.

The railroad empire which Henry Villard amassed crashed soon after his acquisition of the Chicago & Northern Pacific Railroad in November, 1889. Under the foreclosure proceedings instituted in 1893, the Chicago & Northern Pacific Railway Company, in June, 1897, was reorganized as the Chicago Terminal Transfer Railroad, and this corporation acquired the properties of the Chicago & Calumet Terminal Railway Company in June of the next year.



The Chicago Terminal Transfer Railroad itself fell into financial difficulties and receivership, and the Baltimore & Ohio Railroad, in January, 1910, purchased the properties and reorganized them into the Baltimore and Ohio Chicago Terminal Railroad Company, and assumed operations April 1, 1910. When negotiations were under way in 1909, there was question whether its ownership would be joint with the C. B. & Q.

The Chicago Terminal Transfer Railroad, before its acquisition by the B. & O. C. T., built a line from Franklin Park to Mayfair in 1898. This line was never connected with the jointly operated tracks at Franklin Park, nor the C. M. St. P. & P. or the C. & N. W. at Mayfair, and was never operated. The line was torn up by the B. & O. C. T. It was reportedly built to secure interchange traffic of the C. M. St. P. & P. and C. & N. W., available because the Elgin, Joliet & Eastern Railroad had increased its interchange charges. With the building of the extension, the E. J. & E. charges were allegedly reduced and the use of the new line was thus thwarted.

The building of Grand Central Station led the Chicago & Northern Pacific to seek tenants in addition to the Wisconsin Central, the Chicago, St. Paul & Kansas City (Chicago Great Western), which actually did not start passenger service until April, 1892, and its own suburban services. The Baltimore & Ohio soon entered into contract to use the new station. It had reached Chicago in 1874 and through a connection with the Illinois Central at the end of what is now the Brookdale Branch of the B. & O., 1883, used the I. C. Passenger Station at the foot of Randolph Street until 1883, when it occupied its own station, served by the I. C. tracks, located at the foot of Monroe Street. The B. & O. also had a freight station in that vicinity served by I. C. tracks. In 1891 the B. & O. withdrew from the I. C. and entered Grand Central Station with its passenger trains. A freight station on the Chicago & Northern Pacific was leased near Taylor Street. In 1903 the Chicago Terminal Transfer Railroad entered into a contract extending rights for freight facilities, as well as use of Grand Central Station.

For a short time the B. & O. trains used the C. R. I. & P. from South Chicago to Beverly Junction, thence the Pittsburgh, Cincinnati, Chicago & St. Louis Railroad (P. R. R.) to a connection with the Chicago and Northern Pacific near 14th Street and Western Avenue, but in 1892 the Baltimore & Ohio Connecting Railroad was built from connection with the C. R. I. & P. at Beverly Junction,  $2\frac{1}{2}$  miles to 75th Street, where connection was made with the Chicago & Northern Pacific's newly completed Chicago Central Railroad. This link was completed in 1893 and a route to Grand Central Station was formed by using the C. R. I. & P. from South Chicago to Beverly Junction. This continues to be the route of the B. & O. passenger trains to Grand Central Station, as well as the existing route of the passenger trains of the Pere Marquette Railway, which come on to B. & O. rails at Pine Junction, Ind., but formerly moved from Pine Junction via the Chicago Central route to Grand Central Station.

Contracts which today provide services to railroads in addition to those already mentioned now follow in brief summary:

The Baltimore & Ohio & Chicago (B. & O.) contract of April, 1903 with the Chicago Terminal Transfer Company, provided not only trackage from the connection with the Baltimore & Ohio Connecting Railroad to Grand Central Station, along with passenger car servicing and round-house facilities, but provided exclusive use of two freight houses between Polk and Taylor Streets, along with team and storage tracks at 12th Street and Morgan Street.

The Chicago Great Western Railway also negotiated the long term contract of April, 1902 with the Chicago Terminal Transfer Company, supplementing the earlier contract of July, 1896, with the Chicago & Northern Pacific. Not only did it provide trackage to Grand Central Station from Forest Home (Forest Park) and appurtenant services for its passenger engines and cars, but it provided for an exclusive freight house between Harrison and Polk Streets. It also provided for a ninety-eight foot strip of right of way west of 46th Avenue, extending about one mile. Upon this the Chicago Great Western, with additional width of land of its own ownership, maintains its principal Chicago freight yards, and now its passenger coach terminal. Provision was also granted the C. G. W. to reach the Stock Yards by operation over the C. T. T. from 14th Street and Western Avenue.

The Wisconsin Central (operated now by the Soo Line) maintains its principal freight yards at Schiller Park, beyond the limits of the present B. & O. C. T. at Madison St., in Forest Park. It maintains an extensive freight house, with team tracks, store buildings and storage warehouse at Roosevelt Road and Canal Street, reached by a lead of its own from the B. & O. C. T. near Halsted Street; therefore, the Wisconsin Central use of the B. & O. C. T. is largely for trackage rights and for servicing Soo Line passenger trains.

The Soo Line (Wisconsin Central) in 1899 stopped using Grand Central Station and operated its passenger trains into Central Station of the Illinois Central until 1914, when it returned to Grand Central. Its route to Central Station was via an I. C. branch, south from Forest Park to the main line of the Western Division of the I. C. It then followed the I. C. to the St. Charles Air Line and the Lake Front.

The Pere Marquette Railway, by contract of December, 1903, with the Chicago Terminal Transfer Railroad, provided for connection at Pine Junction, and in addition to the use of Grand Central Station for its passenger trains, along with servicing facilities, it arranged for exclusive use of a freight house between Harrison and Polk Streets, along with team and storage tracks at 12th Street. Along with this was lease of 40 acres of ground at 95th Street, known as the Tracy Yard of the P. M. This yard has been relinquished and the Pere Marquette presently leaves the B. & O. at South Chicago, for use of the Belt Railway of Chicago to Rockwell Street, where it maintains its principal Chicago yard. The Belt Railway of Chicago, by contract entered into in February, 1929, arranged for use of trackage from Argo Junction to Proviso Yard for interchange with the C. & N. W. The Belt Railway likewise comes on to

the joint trackage at Stickney, near Argo, to make interchange in the I. H. B. yard at Blue Island.

Grand Central Station, familiarly known in its early days as the Wisconsin Central Station, has been such an important feature of the development of what is now the Baltimore & Ohio Chicago Terminal Railroad, and it is a structure of such renown, that special emphasis is appropriately due it. It displayed its splendor to the public upon its opening—December 10, 1890. Its location was determined by the desire of the railroad to be adjacent to the traffic of the Chicago River, where freight of schooners and steam vessels could directly be handled. The passenger station fell into this scheme of things.

The influence of Mr. Henry Villard was dominating the Chicago and Great Western Railroad, and it was a month before the incorporation of his Chicago & Northern Pacific Railroad that ground was broken for the foundations of Grand Central Station in October, 1889. Mr. Villard arranged to employ the eminent Chicago architect, Mr. S. S. Beman, for the undertaking, and Mr. W. S. Jones was retained as consulting engineer.

Over 15,000 piles were driven for the supporting foundation. The 247 foot bell tower, weighing 6,000 tons, had its weight distributed so each pile bore the weight of 24 tons. 50-foot piles were driven under the tower and 30-foot piles under the balance of the structure. These piles were capped with 12' x 12' oak timbers, and the intervening spaces filled with 12 inches of concrete, overlaid with 12 inch timbers, 4 inches apart, and this overlay also filled in with concrete. On top of this base another 18 inches of concrete was poured. Over the years no evidence of settlement of the building has occurred. This speaks for the fine engineering done.

Originally an 11,000 lb. bell tolled the hours of the clock, with its 13-foot dial—then the second largest clock in the country. In later years the bell was removed.

Grand Central Station is Norman castellated architecture, extending 228 feet on Harrison Street and 482 feet on Wells Street, with six stories in the tower and four in the wings. The Stylobate is Connecticut brownstone, extending upward 26 feet in the tower, surmounted by a coronal moulding cornice, with brown brick above that. Brownstone also extends upward for 8 feet in the wings, and has brick above.

The shafts forming the arches are of polished gray granite. The flooring in the station is variegated red and white Vermont marble. The wainscoting of the walls is pink Tennessee marble, with a skirting base of dark Tennessee marble. The imposing staircase to the restaurant is of Knoxville marble. The specially created hardware by Orr & Lockett, of Chicago, was the subject of wide news comment, because of its beautifully created motifs, and nothing created more comment than the marbleite columns, 25 feet high, reproducing Sienna marble. These are encased iron pillars and were made by the Art Marble Company of Chicago by processes that are trade secrets.

The rooms upstairs furnished offices and provided a hotel. Hotel accommodations were terminated upon the last day of November, 1901.

While the LaSalle Street Station was under construction between 1901 and 1903, the New York Central and the Rock Island through trains used Grand Central Station, using what is known as the "hole in the wall" track at the end of the Grand Central Station tracks.

Throughout the years Grand Central Station has continued to be one of the imposing structures of downtown Chicago, and this passenger station today, modernized in keeping with present tastes, is still one of the fine structures of the City.

The outlines given of the predecessors of the Baltimore & Ohio Chicago Terminal Railroad lead to a view of the property as it exists today, with a book value in excess of 53 million dollars as of January 1, 1947. The Baltimore & Ohio Chicago Terminal Railroad is one of the large terminal railroads of the United States. It is a Class I railroad, with a total income in 1946 exceeding \$7,900,000, and 425 industries served directly with its rails. When the B. & O. C. T. acquired the Chicago Terminal Transfer Railroad in 1910, the operating revenues for the last full year preceding the reorganization were \$1,231,566, and there were 230 industries served by it. In 1946 the operating revenues were \$5,985,694, to which there was added \$1,476,516 from Joint Facility Rents and \$452,660 Non-operating Income from lease of road, miscellaneous rents and other items. The property has been modernized with signalling, interlocking plants, heavy rail and ballast, and today Barr Yard is under construction to provide the latest modern design in a central assembling and distribution focal point.

The Baltimore & Ohio Chicago Terminal Railroad has 78 miles of first track, and 365 miles of all tracks, of which 17 miles are leased to other lines. Furthermore, it holds trackage rights to operate over 42 miles of first track and 172 miles of all tracks of other lines, but does not presently avail itself of these. Its operations are threefold. In addition to conducting a large business to and from the industries on its own line, it provides passenger and freight terminal facilities for the Baltimore & Ohio, Chicago Great Western, Soo Line (Wisconsin Central), and the Pere Marquette, and also provides trackage for several other trunk lines and switching lines which have been previously discussed. Its third and likewise large business is that of an intermediate switching line, handling cars between the many railroads serving Chicago. It serves 34 railroads with 54 interchange points. A normal day's operation presently is the handling of about 3,800 cars, with the use of 90 or more crews.

The Baltimore & Ohio Chicago Terminal Railroad is an interstate carrier, with its own directorate and set of officers and with principal offices in Chicago, but it is a wholly owned subsidiary of the Baltimore and Ohio Railroad Company, and all of its stock and its bonds are owned by the Baltimore & Ohio.

# The Locomotive Feed Water Heater

By JOHN J. ALVES, JR.

Paper read before the New York Chapter of the R. & L. H. S., Nov. 15, 1946

The Locomotive Feed Water Heater, from the standpoint of design or as an auxiliary for the locomotive boiler, is as old as the locomotive itself, since we find that the first patent for a feed water heater design was granted in England in 1802 to Trevithick & Vivian. This is presented in British Patent No. 2599.

The design was seemingly of no practical value, and it is mentioned here since it is of interest from a historical standpoint, being the first instance which was proposed for a feed water heater for locomotives.

Locomotive Feed Water Heaters are of two types; (a) the "open" heaters, being those in which the water and steam mix directly in the heater; and (b) the "closed" type, being those in which the water passes through a series of tubes and the steam circulating around the outside surface of the tubes.

There have been many patents granted in the United States and foreign countries for feed water heater designs. Some have actually been put into service, many of them in the early days with no record of the success accomplished. All of these will not be considered in this paper, and it is intended to mention those which will show the general progress and development of the locomotive feed water heater.

Following Trevithick & Vivian's patent, Goldsworthy Gurney was granted British Patent No. 5554 in 1827. This was the so-called surface or closed type heater, but this also was of no real practical value.

The third design for which a patent was granted was applied to the locomotive "Royal George," which was put into service on the Stockton & Darlington Railway in England in October, 1827.

Quoting from a paper delivered by Mr. J. Snowden Bell in June, 1918, at the 50th Annual Meeting of the American Railway Master Mechanics Association in Chicago: "This engine is stated to have been fitted with a feed water heater, and its application is believed by the writer to be the first that was made to a locomotive.

In 1828 another British Patent No. 5628 was granted to Nathan Gough. This is the first patent granted for what is known as a surface type or tubular construction. This would be considered a closed type of heater today.

This design was subsequently improved and developed by Ross Winans, the celebrated locomotive builder of Baltimore. These were applied to the "Grasshopper" and "Crab" engines of the Baltimore & Ohio Railroad in 1836. Patents were granted Mr. Winans July 29, 1837, U. S. Patent No. 309.

In 1838, U. S. Patent No. 628 was granted to Mr. L. H. Mann and L. B. Thyng, of Lowell, Mass. This is the earliest design which has been found in which it is proposed to locate a feed water heater in the stack of a locomotive boiler. This patent is also thought to be the earliest

record of a proposal to heat feed water by passing a portion of the exhaust steam to the tender.

Several designs of locomotive feed water heaters located in the stack as proposed by Messrs. Mann and Thyng were later produced and applied to some extent in railroad service, but none of them made any extended record. It is obvious that no heater of this type would be practicable in a locomotive boiler of the large dimensions which are common today.

The principle of heating water in the tender tank by exhaust steam which was outlined by Mann and Thyng was thought to be a good one by many subsequent designers, and many appliances of the type were proposed, some of which were applied in service, but none of them were successful enough to justify continued service.

As an indication of the attention which has been given to this plan, fifty or more patents have been issued in the United States for appliances designed for its operation.

Another patent, British No. 8561, was granted in 1840 to Edwin Turner; and another in 1840, No. 8750, to George Thornton.

A tubular type of feed water heater was applied to a large Mallet locomotive built in 1909 by the Baldwin Locomotive Works for the Southern Pacific Railway. The design is an old one, as it is similar to the design of British Patent No. 11946, in 1847 for James Peddler.

The Virginia Locomotive Works, a locomotive building establishment at Alexandria, Va., was operated by the firm of Smith & Perkins from 1851 to 1858, Thatcher Perkins, who had previously been and subsequently was Master of Machinery of the Baltimore & Ohio R. R., being the Partner in Charge of the Mechanical Department of the Works. A feed water heater, in which a portion of the exhaust steam as well as the heat of the smoke-box constituted the heating medium, was designed by Mr. Perkins, and is the subject of U. S. Patent No. 6561, granted to him June 26, 1849. This heater was applied on Engine 54 of the Baltimore & Ohio Railroad.

Smith & Perkins built between 1852 and 1854 fifteen locomotives for the Pennsylvania Railroad, and eleven of these locomotives were equipped with the Perkins heater.

J. E. McConnell, a prominent English motive power officer, made a number of improvements in locomotive design, among which was a feed water heater, in which it was proposed to utilize the heat of the gases passing through the smoke-box and the steam passing through the high exhaust pipes which were standard in English locomotives of his time. This is British Patent No. 13729 of 1851.

Following these Patents there were other patents granted as follows:

French Patent No. 6692 of April, 1851, Herr Kirchweyer of Hanover. This design was presumed to have been the most successful up to that time, as it is reported that between 1850 and 1860 a number of applications were made in Germany, and that it was also tried out on a locomotive of the Paris, Lyons & Mediterranean Railway in 1854.

U. S. Patent No. 9312 was granted in 1852 to M. W. Baldwin of Philadelphia, and David Clark, Master Mechanic of the Mine Hill Railroad, Schuylkill Haven, Pa.



U. S. Patent No. 11880 was granted in 1854 to R. A. Wilder, also of the Mine Hill Railway.

James Milholland, who at the time was in Charge of Motive Power Department of the Philadelphia & Reading R. R., fitted a feed water heater on the engine "Juniatta," which was built at the Reading Shops of that Road in 1855. It is interesting to note that two of these heaters were still in service in 1881, twenty-six years later.

The general principle and essential features of the Milholland heater form the basis of many appliances of the same type, which under various modifications of detail have been from time to time subsequently produced and put in practice.

There were a number of other Patents granted from 1859 to 1899, in England, the United States, and France, for various types of feed water heaters, some of which were never actually put in service.

In 1899 the first exhaust steam injector was developed by Davies & Metcalfe, and tested on Locomotive No. 1507 of the Pennsylvania Railroad; and was also applied on two locomotives in France. After a series of test runs the injector was removed at the request of Mr. Metcalfe.

Mr. M. N. Forney, devoted a great deal of time and study to the subject of feed water heaters, and two U. S. Patents were granted to him, No. 632,708 in 1899, and No. 688,402 in 1901.

However, it appears that neither of these were ever used to any advantage in actual practice. The designs were reported to have been bulky and costly, added considerable weight on the engine truck, and prohibited access to the smoke-box and boiler tubes.

A tubular heater, known as the Brown heater, was tried out in 1908 on the Chicago, Milwaukee & St. Paul Railway, and operated for some time on several divisions. When operated under the care of the inventor it is stated to have shown a fuel saving of four or five percent, but when put into pool service no appreciable saving was shown, and it was abandoned after one test.

The Caille-Potonie feed water heater was first applied on the Northern Railways of France in 1905, and is reported to have had a total of 245 applications up to March, 1913. This system is covered by British Patents No. 16058 of 1901; No. 9930 of 1903; No. 23015 of 1906; No. 15860 of 1908; and Nos. 29900 and 30299 of 1910.

The reports of the performance of this system in Europe were very favorable, as savings in fuel were reported to be 12% to 18%.

Two applications of this system were made here in the United States; one on the Baltimore & Ohio, and the other on the Seaboard Air Line Railway, but the heaters were subsequently removed, as the results obtained in either case were not favorable.

The Pittsburgh Works of the American Locomotive Co. applied a feed water heater to a 2-8-0 locomotive which it built for the Lake Superior & Ishpeming Railway in 1906.

Mr. W. H. Richmond, Master Mechanic of the Railway Company, reported that this heater was in service for about two years, and favorable results were obtained.

A feed water heater was applied on four or five locomotives of the Central of Georgia Railway in 1908. This was a tubular design of heater. Tests were later run which showed a fuel economy of about fifteen percent.

Another design of feed water heater was manufactured in 1913 by Messrs. G. & J. Weir of Cathcart, Glasgow, Scotland. The system is similar to the Caille-Potonie Heater. Applications were reported to have been made to the Egyptian State Railways, Central South African Ry. Co., and Glasgow & Southeastern Ry. Co.

The Lovekin feed water heater was developed and applied in 1916. This is a closed type of heater, and represents one of the first successful heaters used in this country. This was exhibited in Atlantic City during the 1916 conventions, and at that time it was handled by the Locomotive Feed Water Heater Company, which was subsequently taken over by the Superheater Company.

Considerable progress was made by the Superheater Company with this equipment, and many modifications and improvements were made during the past twenty years.

The first pump used was a double-acting pump designed by Westinghouse, but in later years a centrifugal pump was used with the tubular heater. It is expected that about 5,000 of these heaters are in service in the United States, and probably 1,000 in Canada.

The next closed type of feed water heater used successfully in this country was developed about 1926 by the Coffin Co. of Englewood, N. J. This was a tubular heater, but differed from that of the Superheater Co. in that the tube bundle was semi-circular in form to follow the contour of the smoke box. The pump is a high pressure centrifugal pump. Approximately 1,000 of these heaters are in service in the United States and Mexico.

Mr. T. C. McBride developed an open type feed water heater in 1904, and the first unit was applied to a locomotive of the Atchison, Topeka & Santa Fe, built by the Baldwin Locomotive Works.

Mr. McBride is now consulting engineer for the Railroad Division of the Worthington Pump and Machinery Corporation, and has contributed much to the development of the Open Type Heater.

This first heater was tested out over a period of two years with very little trouble in operation.

Several designs were subsequently developed, and in 1918 the first type "A" heater was sold by the Worthington Pump and Machinery Corporation to the Pennsylvania Railroad for test purposes. Three more were applied in 1919.

It is interesting to note at this time that although the idea of feed water heaters for locomotives was not new, very little progress was made up to 1918 in this country. At the conventions of 1920 there was considerable discussion on this subject by individuals because American Railways were not adopting the feedwater heater.

It was pointed out that there were over 10,000 feed water heaters in service at that time on the Railways of Europe.



The following is printed from a copy of the Daily Edition of the Railway Age of June 12, 1920:

**"Is America Slow in Modernizing?"**

"When one stops to think of how much more promptly European roads have adopted various economical features in locomotive design than have the Railroads of the United States, we begin to wonder if the reputation of America for efficiency is not exaggerated. A few years ago it was the matter of superheaters. Some of the European roads made a standard practice of superheating before the subject was hardly considered in the United States, and now history is repeating itself in the case of feed water heating. There are thousands of locomotive feed water heaters in use on the railways of Europe where there is one in use on the railways of the United States. The first argument in defense of the American railway men will be that the cost of fuel has risen to a far greater extent in Europe than in the United States. This, of course, is true and is responsible at the present time for the rapidly increasing use of feed water heaters abroad, but the argument does not stand, as European roads began to apply feed water heaters on a large scale some seven to eight years ago, and in 1912, when coal prices were normal, there were over 3,000 feed water heaters in operation. Feed water heaters have become as common on some of the railways as superheating is today in the United States. This method of fuel economy has great possibilities. Its efficiency has been established beyond doubt in Europe. There is no reason why it should not be in the United States."

At this same time several reports were made by railroads in connection with their experiences with feed water heaters and the results of tests which had been made. These included reports of tests made by the Pennsylvania Railroad, the Baltimore & Ohio, Boston & Albany, and the Canadian Pacific.

In 1920 the Southern Pacific Railway purchased five open type heaters, and five closed type heaters, in order to determine what benefits could be expected of feed water heaters for locomotives. Tests were made using the dynamometer car, and it was evident from these tests that the use of the feed water heater increased the power output of the locomotive. As a result of the experience gained from these tests the Southern Pacific applied open type heaters to all of the locomotives which they have ordered down to the present day. In addition to the new locomotives which were equipped they also purchased a large number of open heaters for application to old power in the Railroad Company shops.

During this time the Pennsylvania R. R. had continued with the tests of the heaters sold them in 1918 and 1919. These consisted of tests at the Test Plant in Altoona, as well as a series of Road tests. The results of the tests were reported in detail in 1920.

Following these tests the Pennsylvania R. R. purchased in 1922 and 1923 a total of 475 Open Type heaters for application to 2-10-0 type locomotives under construction at the Baldwin Locomotive Works. This was the first large quantity order for heaters placed in the United States, and the Pennsylvania R. R. has continued with the use of the feed water heater on all steam locomotives ordered and built since that time.

Much progress has been made during the past 20 years, and the value of feed water heaters has become increasingly evident in the past ten years, since all of the new steam locomotives ordered by the American Railways have been equipped with feed water heaters of one type or another.

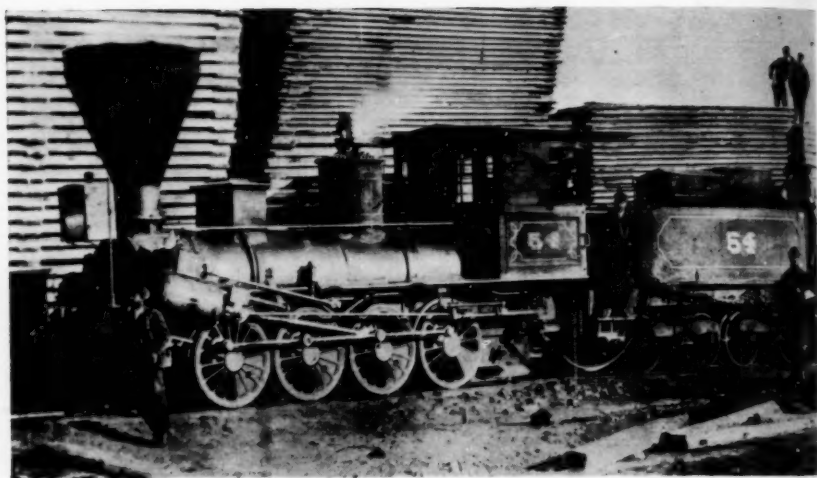
Applications have been made to old power by the Railroads, and it is estimated that there are in service today approximately 12,000 heaters in the United States. These would be divided between the following types:

- Open Type Heaters
- Closed Type Heaters
- Exhaust Steam Injectors
- Hancock Turbo Feed Water Heaters.

The Hancock turbo heater is one of the latest types developed in this country. This is somewhat similar to the open type heater in that the water and steam are mixed in the condensing chamber. The pump is a four-stage high pressure centrifugal.

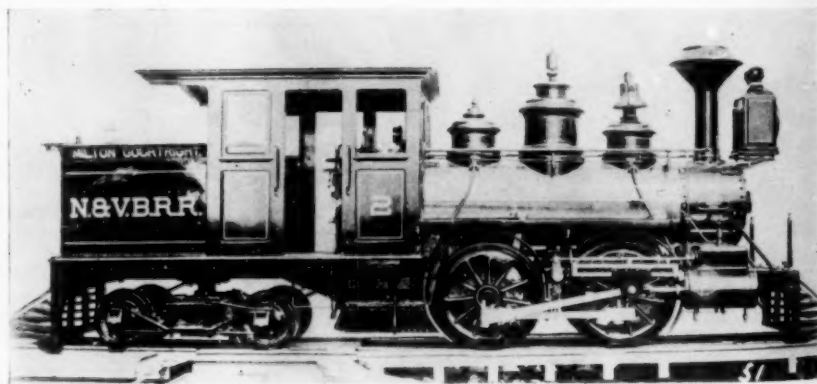
The device is manufactured and sold by Manning, Maxwell, and Moore, of Boston, and it is presumed that the first unit was brought out about 1927. There are approximately 100 of these heaters in service at the present time.

t  
s  
3  
  
s  
e  
a  
  
l  
t  
t



Courtesy of Robert C. Schmid

Baltimore & Ohio R. R. #54. This engine was equipped with the feedwater heater designed by Mr. Perkins, under patent granted him in 1849.



Courtesy of the Merrill Collection

Norfolk & Virginia Beach R. R. #2, "Milton Courtwright," Hinkley, 1883.

## The Norfolk & Virginia Beach Railroad

By H. T. CRITTENDEN

The Norfolk & Virginia Beach Railroad and Improvement Company was organized mainly to buy and resell land at a point on the Virginia coast, dead east from the city of Norfolk which the company named Virginia Beach. This organization took place during the middle of 1882, and, to be quite frank, the railroad end of the plan was secondary to the real estate. The gauge decided upon was standard narrow gauge, that is, thirty-six inches.

The road was one of those model pikes where the track was laid out by heading dead east and kept going, no curves, and only one grade that could be called such in even the remotest sense of the word. The Norfolk station was owned by the Norfolk & Western which kindly consented, for a certain sum, to allow the narrow gauge the use of one side of its platform. In the center of this platform stood a huge wooden barrel which during the hot summer days was kept full of ice water. It was like a spring in the desert to the thirsty passengers of each road, until someone found a dead cat in it.

Unfortunately, the N & W tracks occupied all the dry land around the station so the N. & V. B., when it built in, had to do all their track laying on trestle-work. On leaving the station the track crossed Mahone's Lake and then Mahone's Canal, all on a continuous trestle and draw. This Mahone's Lake had been formed when General Mahone guided the troubled affairs of the old Atlantic, Mississippi & Ohio during the turbulent '60's. To form a yard he did a lot of filling and formed a sort of causeway connecting Brambleton and Norfolk. This shut in a large body of water. To form an opening for boats to enter and leave the enclosed water, he built a sort of ditch along the north side of the railroad yard. Taking it all in all the General spent a lot of A. M. & O. money but did a lot of good.

From the end of the trestle the track went into a series of curves, passed through Brambleton, where the company shops and general offices were located, slid down a slight grade, crossed Mississippi Creek, and eventually reached Broad Creek. This entire section was two and a half miles long. In the early months of the road's existence, Broad Creek was the western terminus for the draw was the last structure on the line to be completed. Wharf and turning facilities were built there and trains transferred their passengers to a steamboat for the final part of the trip. The first steamer to act as a ferry was the steam yacht "Storm Signal" owned by Mr. Marshall Parks, president of the company. No ferry was ever owned by the company but service was maintained with chartered boats until the draw was completed.

The straight section of the track started at Broad Creek and extended for fourteen and a quarter miles to Virginia Beach. The only grade was a slight rise at Oceana, two and a half miles west of the Beach and on a dark night a headlight could be seen from Broad Creek when the engine topped this rise.

The track was as smooth as thirty-pound iron laid on sand and oyster shells would permit. To say there were no holes in the track is to go a little too far by present track-building standards but it was smooth enough to permit trains to make excellent time. The crews never let the chance to "let her out" slip and they took unusual pride in their equipment. Other than the bridge at the station in Norfolk, the one over Mississippi Creek and the one over Broad Creek, there were two others worth mentioning. There was a fairly long trestle over Lynnhaven River at Lynnhaven and one at the extreme eastern end of the straight section. Upon crossing this last mentioned trestle the track swung north up the main street of the Beach, Atlantic Avenue, to the station near the Princess Anne Hotel, another holding of the Improvement Company.

The first engine on the road was a little saddle tank job loaned the company by Mr. Howard Johnston in March 1883. She came up from the Johnston logging road in North Carolina on the steamer "Currituck," was transferred to another steamer waiting at Norfolk with iron and flat cars for Broad Creek. Upon arrival at Broad Creek she went right to work pulling construction trains until the company's first engine arrived in April. At that time she went back to North Carolina and the "Marshall Parks" No. 1 took over her work. The "Marshall Parks" was a product of the Wyoming Valley Locomotive Works. A second engine arrived in July, the "Milton Courtwright" No. 2, a pretty little 0-4-4 Forney built by Hinkley. Still another engine arrived in May 1884 but she reposed at the N & W depot while the Rhode Island people haggled over excess weight. She was eventually reclaimed by the builders who, it is claimed, resold her to the Atlantic & Danville at Clairmont Wharf, Va. Be that as it may, the A. & D. had a Rhode Island No. 2 built in 1884 which ran until the narrow gauge division of the Southern Rwy. closed down.

Possibly the best known engine, and the most liked by the crews, was the "James H. Hopkins" No. 3, a beautiful little 4-4-0 built by Thomas W. Godwin & Co., operating as the Virginia Iron Works, of Norfolk, Va. Being a "home" product she would naturally come in for a little extra attention but it has been claimed by roads which had Godwin engines that they were excellent machines. The Wabash had quite a number of them. Another little item of interest is that several engines carrying Baldwin plates were actually Godwins, contracts having been sublet to the Norfolk firm, in fact, Godwin's first engines were built for Baldwin.

When the "Hopkins" was built and turned over to the road, her first engineer was not familiar with her construction and burned her journals. She was then turned over to an engineer who had come south on account of the health of his wife. He made himself thoroughly familiar with her construction and asked that she be assigned as his regular engine. This was done and after operating her for a time he recommended that the valve lap be reduced. They were accordingly taken down, sent over to the Godwin plant and planed down slightly. After that she would start a much longer train and would get under way faster.

On one occasion eighteen open cars and a baggage car were to be hauled to the Beach as an excursion of Red Men. At this time Godwin happened to come around with some officials of the Atlantic & Danville who wished to see a Godwin engine in operation. They were thinking of ordering an engine if the Godwin product was all that was claimed for it. When Godwin saw the train behind the engine he was terribly depressed for he figured it was an impossibility for the engine to move her train without a good deal of trouble and that was the very last thing he wanted. In desperation he spoke to the engineer and asked that he do all in his power to get his train away as quickly as possible and with as little trouble as possible. He laid his cards on the table, so to speak, explaining that the Iron Works was rather hard up and that this impending order from the A. & D. was the difference between failure and success.

The engineer went to the back of the train, put a block of wood on the rail and backed all the slack out of the couplings against it. He then asked the conductor to let him know exactly one minute before leaving time, which he did. The blower was opened and the steam pressure raised right up to the mark so that when the go-ahead signal was received the pops were blubbering but had not raised. To the surprise of Godwin, as well as the visiting officials, the little kettle walked right away with those nineteen cars without losing her feet once and picked up speed steadily as she passed out of sight over Mahone's Canal. Godwin made it a point of thanking the engineer for that exhibition. Oh yes, Godwin got the contract.

In later years this particular engineer was offered the position of master mechanic but sectional feeling was still too strong and his life had been made miserable by the other men. His wife had died in the meantime so he felt that it would be better if he returned to the Troy & Boston, which he did. He recently died on a little farm in Vermont and with him died invaluable information on the early history of the lesser known roads in Tidewater Virginia.

From the very first the "Courtwright" gave trouble. She persisted in jumping the track when running stack first. In fairness to the engine, we might say that mostly likely the track had something to do with it. The company finally sent her to Godwin's where she was converted into a neat little 4-4-0 with an 8-wheeled tender. To try and completely change her bad reputation, she was given the road number "5." In June, 1886, Mr. Troy, the superintendent of the road came back from a vacation in Florida with a little engine off the Florida Southern. She ran on the narrow gauge under her old number, 6, and was a mighty smart job.

Practically all of the cars were built in York, Pa. These consisted of box cars, low-sides with removable boards, open and closed passenger cars, baggage cars, and two chair cars named "Norfolk" and "Princess Anne" for the two counties traversed. A caboose was a luxury never indulged in. A regular passenger job generally consisted of an engine, a baggage car, an open passenger car, a closed passenger car, and, on certain trips, a chair car. Frequently a box car was used in place of the baggage. On holidays, Sundays, and excursions, there was no set rule

as to what constituted a train. They hung as many cars on an engine as she would pull or as many as was necessary to take care of the crowd. The road did most of its business in the summer when the beach was open but during the winter trains were run to accomodate patrons living along the line. About half the number of trains were run during the cold months as during the warm. The summer freight consisted of fish from the beach and farm products and timber from the way points. During the winter there was nothing from the beach, a little farm produce, but a good deal of timber. Trains running east carried very little, if anything, all the traffic being westbound.

The company had its financial troubles like any other road. Although the money to build the road was easy enough to get, paying it back was another story and December 1884 saw it pass into the hands of receivers appointed by the court. One year later the company managed to scrape together enough to satisfy its creditors and the receivership was discontinued. Bills began to pile up again and on May 17th, 1887 the road was sold at public auction. The creditors bought it in, cut the name to the Norfolk & Virginia Beach Railroad Company, cut the service, and began giving freight traffic a little honest attention. It wasn't long before holly, persimmon, and dogwood logs demanded all the flats the company could muster. Solid trains of these rolled in from the east every day. A cut in fare increased the passenger traffic.

With business steadily increasing it was only natural the company should begin considering an extension. The point selected was Princess Anne Court House, a little village to the south of the main line and located in the heart of an extremely rich farming section. It was estimated that during the potato season as many as fifty cars a day would be moved. Plans were made, a dummy company known as the Princess Anne Railroad Company organized, and a vote called for July 9, 1888 to see if the county would subscribe \$50,000 of the estimated cost of \$200,000. If the subscription was voted it was agreed to build the road beyond the court house to the village of Pungo.

The vote was taken as planned but that was the end of the company's plans for the motion was voted down two to one. That idea having blown up, the company turned to the idea of changing the gauge but nothing came of that either.

The narrow gauge, like all other roads of that day, made life worth living for those working on it. Of course, it probably had a little help from the men but life certainly wasn't dull on it. Most of the crews gloried in showing what could be done in the way of speed for then as now people thought that narrow gauge trains were necessarily slow. Once a quartet consisting of two couples made a crew slightly peeved just before leaving the beach by commenting on the "dinkey train." It seems they were anxious to make the New York boat and were in the mood to make fun of any and everything not definitely stamped "New York." Just to prove that New York didn't have a monopoly on speed the crew stuck their heads together and out of the huddle came a simple scheme but one that always works, barring accidents and a nosey official. The fact that this particular run was a through trip with no stops helped.



A few minutes before leaving time the engineer climbed down with a hammer and began industriously banging away on the engine frame. The fireman put in a good fire, opened the blower, grabbed a wrench, climbed down and began to do a little banging on his side. Leaving time came and went but the anvil chorus continued. The quartet began to squirm and make rather caustic comments first in stage whispers and then loud but anxious tones. Ten minutes after leaving time the engine crew climbed back in the cab, the skipper grabbed the first running board and the train gently eased away. It ambled down Atlantic Avenue, around the curve and across the trestle at a leisurely pace but then things began to happen. The low places in the track seemed to level out as the speed picked up. The skipper on the eastbound job waiting on a siding at Lynnhaven swore the train passed so fast he couldn't count the cars while the draw tender at Broad Creek claimed he never saw the train pass at all. At exactly three minutes before arrival time the train was spotted neatly at the Norfolk platform and the engine crew was on hand to watch the captain help four rather sickly looking individuals off the train. If you want to figure out just what they did on that trip it will be necessary to know that the time card allowed a flat thirty minutes from start to stop.

There were such things as collisions and of all places, on the straight section. On June 25, 1890 the early morning train from Virginia Beach piled into an empty freight car standing on the main line just east of the Kempsville station. The car was a complete wreck, the engine badly damaged, while the crew and passengers came out of it with a severe shaking up. The engineer could have seen the car for miles before he got to it but the company seemed more concerned over how the car got where it was. That was a question no one could or would answer.

Possibly the worst tangle occurred when an empty excursion train from the beach ran into an open switch and locked horns with a train of logs that had just backed into the clear. This little get-together was caused by the colored fireman on the freight losing his head and opening the gate right under the pilot of the passenger train. For some reason the passenger train hung to the iron upon hitting the open switch but kissed the other train so emphatically it took two engines to pull them apart. Both crews had time to join the birds and no one was hurt except the freight engineer who lost most of his pants in getting through a barbed-wire fence. The colored fireman was never seen again.

On the morning of August 22, 1889 an eastbound excursion train ran into an open switch at London Bridge and tied into two empty box cars. Engineer J. E. Moore stuck and managed to slow down slightly but was pinned in the cab when the engine turned over and slid to a stop on her side. The rest of the crew frantically dug him out and other than a few burns and bruises, he was unhurt. The two box cars and the baggage car were pretty thoroughly smashed but the rest of the train remained on the track and no one was hurt in it. It was necessary to lay a temporary track around the wreck before traffic could be resumed.

Two days later, Caaiphus Caffee, a baggage master, was trying to get his car coupled in the train when the engine backed suddenly and crushed him. There were quite a number of such accidents.

Rule G never amounted to very much, at least no one paid much attention to it. One engineer was notorious for his drinking and was quite open with it until he dumped the engine for the early morning train into the turntable pit on a summer Sunday. He tied up the entire system until late afternoon. That stunt looked too bad on the daily financial sheet to be ignored so a warning was administered.

Another engineer who liked his liquor was the master mechanic. That's right, the master mechanic was also the spare engineer. It fell to his lot to haul an excursion to the beach and as the train had to lay over until late afternoon, the crew wandered off to amuse themselves as best they could. Leaving time arrived and the crew assembled, that is, all except the engineer. The passengers arrived and leaving time found everything ready but still no engineer. A hasty consultation resulted in the crew splitting up, half taking one side of Atlantic Avenue and half the other. Eventually the engineer was found, dead drunk in a thirst emporium where he could get the most for his money. He was lugged back to the engine, propped up in the fireman's seat and the train left town with the fireman running and the brakeman firing.

At this point all the versions agree on one item and that is that the brakeman and fireman had to figure out who was to do the running for the fireman had been railroading only a week but the brakeman had been on the road only two days.

The hunt at the beach had taken time so it was after dark when the train got away. The regular had been due out of Norfolk for some time so the fireman was cautioned to keep a careful watch and when the headlight on the eastbound train got fairly close to get into the first siding he could find. In the mean time the regular had left Norfolk, the superintendent having finally come to the conclusion that the extra was off the track or having engine trouble. It happened that the fireman on the regular train was the brother of the master mechanic and when the extra was late he strongly suspected what had happened. As the train entered each curve he kept a careful watch and was as jittery as a kitten. As the train rounded the curve onto the Broad Creek draw he happened to take a quick look out the front window while putting in his fire and saw the full moon, newly risen, shining right down the track. That moon looked too much like a headlight to take time for a second look so he joined the birds.

The engineer continued on his way, ignorant of the fact he had lost his fireman. Eventually the engine began to die and then an investigation showed there was neither steam nor fireman. After he had built up his fire and had the kettle steaming again, the train was backed up until the fireman was found sitting on a pile of ties. Upon being questioned there was nothing for him to do but tell the truth as to why he had unloaded in such a rush and his story planted a seed of suspicion in the mind of his engineer.

In the mean time the extra, making all the time possible, kept coming although the headlight of the regular was plainly in sight. When it began to get close they ducked into a siding, which was Rosemont, transferred the engineer to the right-hand side, and hoped the regular

wouldn't stop. It didn't but its engineer was very careful to see if he could see the other engineer. Everything apparently looked all right.

The extra got into town without any trouble and the crew, working frantically, managed to get the engine back to the roundhouse and the engineer out of sight without anyone being the wiser. When the regular got back to town, its engineer asked questions of all the crew but he could get no statements into which he could get his teeth. Eventually the master mechanic was fired.

The same master mechanic was once faced with the problem of getting an engine back to firm ground after she went down the dump into Mississippi Creek one cold winter night. Colored section hands were gathered from far and wide to get her back on the track before time for the first morning train. Big fires failed to provide the necessary warmth and keeping the men at work became a serious problem. The master mechanic finally hit upon a very simple idea. He ordered delivered immediately a keg of rum and a quart of Scotch. The keg was placed near a roaring fire, the head knocked out and a tin dipper hung on the rim. When an exhausted section hand staggered up the fill he was led first to the keg and then to the fire. The idea worked wonders and morning found the engine in the shop, caked with mud but otherwise unhurt. What happened to the Scotch? Apparently that was for local consumption.

While the master mechanic was giving the engine a thorough inspection, the superintendent, a pious soul, dashed in waving a bill against the railroad company for a keg of rum and a quart of Scotch. The master mechanic figured the company should co-operate to the extent of paying for the "encouragement" but the super couldn't see it that way. The argument was hot and heavy but the company paid for the liquor.

In September 1896 engine No. 7 developed a leaking dryer pipe, in fact, the leak was a split about eighteen inches long. The master mechanic failed to tell Engineer Babbitt about it when he, with Bill Whitehorn firing, took her and headed for the beach to bring in two cars of fish. There were no others in the crew so it was necessary for both men to be on the ground at the same time when they got ready to couple up to the cars. Babbitt had left the gear in forward motion and the 7-spot decided to start for home. She ambled along slowly but fast enough to stay out of reach until she topped the rise at Oceana and then began to really roll.

Engineer Purcell was headed to the beach with No. 8 on a regular run and when just east of Lynnhaven he saw the engine top the rise at Oceana and when she got close enough he tried to blow her down. A second attempt convinced him something was decidedly wrong so he stopped, reversed and got rolling just as quickly as he could. Luckily the 7 ran out of steam soon after passing Lynnhaven and gradually died with Purcell just staying out of her reach. What happened to Babbitt and his fireman? They eventually showed up, pumping a hand car for dear life.

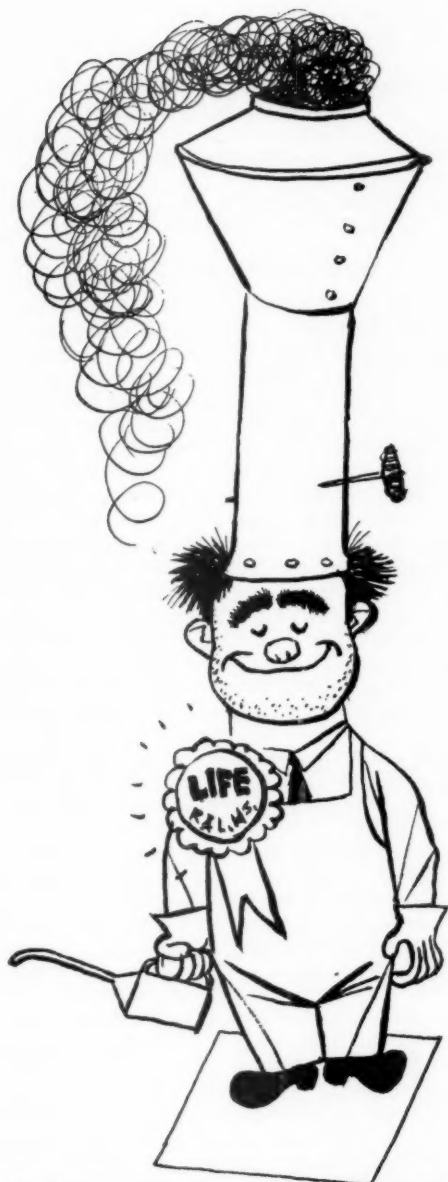
In September 1890 the idea of an extension of the narrow gauge to Pungo again was brought up. The branch would be about fifteen miles long, would follow "Pungo Ridge" to Pungo Ferry, and would open up

a hunting and shooting section to Northern visitors. Again the whole thing hinged on a \$50,000 subscription by the county. The line was to leave the main line at Jackson's Station, later known as Kempsville Junction. The idea found much favor in the county but trouble of a totally unexpected nature showed up.

A company known as the Danville & Seaboard R. R. Company obtained a charter to build into the territory served by the N. & V. B. It is hard to say whether or not the company expected to actually build a line of railroad but the officials of the narrow gauge organized the Norfolk, Albemarle & Atlantic on March 2, 1891 and purchased the charter. The narrow gauge continued uninterrupted operation under the new name. The change of gauge was also given serious consideration.

The purchase of the D. & S. put the company's finances in a rather bad condition and they gradually grew worse. Money was borrowed from Northern interests to meet pressing debts but that loan became more pressing than the others. It became a case of pay up or be sold out. On April 26, 1896 the creditors organized the Norfolk, Virginia Beach & Southern and took over the road.

Immediately plans were made to change the gauge and to build the extension. This branch was to go all the way to the end of land at Munden rather than stop at Pungo Ferry. By going through to Munden, or Munden Point as it was known, the water traffic on the North Carolina sounds would be tapped. The first standard gauge train ran through to the beach on June 1st, 1897. The narrow gauge equipment was stored at Broad Creek until buyers could be found. Memory nor records recall the final disposition of all of the equipment but one engine eventually found her way to the Gray Lumber Company at Waverly, Va. The Norfolk, Willoughby Spit & Old Point R. R. purchased some of the passenger equipment but the trucks had to be changed before they could be used.



**"A Little Nonsense Now and Then is Relished  
by the Best of Men!"**

No, the above sketch is not what the well dressed man wore in the last Easter Parade. It simply shows how one of our members felt upon being elected a Life Member of this Society.

## Worth Reading

Compiled by

ELIZABETH O. CULLEN, *Librarian, Bureau of Railway Economics, Association of American Railroads, Washington 6, D. C.*

### BOOKS AND PAMPHLETS

*British Transport Commission: Railway Organisation* [from January 1, 1948]—Statement of Sir Cyril Hurcomb, chairman, November 26, 1947. Press releases from the British Transport Commission, 55 Broadway, London, S. W. 1, England. Include: *Map of British Railways—Broad Outline of Regions—Stage 1*. Printed in The Railway Gazette, Nov. 28, 1947, pp. 608-610; in Modern Transport, Nov. 29, 1947, pp. 2, 3, 17. Names of officers "so far as they have been announced" compiled and published by The Railway Gazette as Supplement to its January 30, 1948 issue, with title: *British Transport Commission—Directory of Officials*. 20 p. 8°. *Railway Executive*, pp. 4-17.

*Commercial Air Transportation—Revised Edition 1947*, by John H. Frederick, professor of transportation and foreign trade, University of Maryland. 791 p. Illus., maps, charts. Chicago, Ill., Richard D. Irwin, Inc. \$6.50. "... Now that hostilities are over, it seems a fitting time to again examine the various aspects of commercial air transportation in order to take notice of many war-engendered developments and to bring the entire subject up to date. The present volume is, however, more than a 'revision' of a previous edition. This is a new book . . ." Preface, p. iv.

*Edaville Railroad*, by Linwood W. Moody. 80 p. Illus. South Carver, Mass., Ellis D. Atwood. \$1.00. "Story of Ellis D. Atwood's midget cranberry line . . . eighteen hundred acres long and only two feet wide . . ."

*Géographie des Chemins de Fer Français*, by H. Lartilleaux, inspecteur principal à la S.N.C.F. 337 p. Maps, charts, illustrations. Paris 9, France, Librairie Chaix, 20 rue Bergère. For price, see your book importer. Describes railways of France and the sections served, with maps and charts of each section, including yards and terminals. History of railroads in France, with maps showing growth from 1850-1946, pp. 1-10.

*Locomotive Cyclopedia of American Practice—1947 Edition*, compiled and edited for the Association of American Railroads—Mechanical Division. Roy V. Wright, Editor. 1418 p. New York 7, N. Y., Simmons-Boardman Publishing Corporation. \$8.00. Defined and illustrates types of steam turbine, electric, and Diesel-electric locomotives for railroad and industrial service, as well as their parts and equipment, and locomotives built in America for operation in foreign countries. Includes a section of Locomotive Shops and Engine Terminals. 13th edition.

*The Milwaukee Road—Its First Hundred Years*, by August Derleth. 330 p. Maps, illustrations. New York City, Creative Age Press, \$4.00. Corporate history, pp. 265-287. Chronological history of development

... with key to constructing and predecessor companies, pp. 288-310.  
Bibliography, pp. 311-315.

*The Nickel Plate Road—The History of a Great Railroad*, by [Mrs.] Taylor Hampton. 366 p. Maps and illustrations. Cleveland 2, Ohio, The World Publishing Co. \$3.75. "... The Nickel Plate Road, ... has a colorful background filled with events—not all momentous—but each of interest or pride to many ..." Introduction, by John W. Davin, president, The New York, Chicago and St. Louis Railroad, p. 7.

*Palestine Railways—Diary 1948*. 157 p. End map of Palestine Railways. Published for the General Manager [A. F. Kirby], Palestine Railways by Advertising contractors to Palestine Railways, Haifa, Palestine. "... is meant to be more than just another diary. It aspires to become an indispensable companion of every business enterprise in Palestine. Its informational section is intended to provide the business community ... with a concise source of information on the laws, regulations and tariffs, governing the day-to-day conduct of business in our country. ..."

Once the Lebanese Railway between Nagua and Tripoli is open for public traffic and connection services provided with the Palestine Railways, the final link in the through route by standard gauge railways from Egypt to Syria, Turkey and beyond into the maze of European railways will have been completed. ... p. 4.

Distances by rail and road between points, pp. 149-150.

*Passenger Tickets*, by Lionel Wiener, professor at the University of Brussels, Belgium. XXIX, pp. 218-1173, [1] p. Illus. and facsimiles. Abstracted from the Bulletin of the International Railway Congress Association. London, England, The Railway Gazette. 20 shillings. Discusses status of passenger ticket; systems of ticketing; pecuniary aspects; ticket representation of tariffs; checking and statistical function of tickets; ticket issuing entities; physiology of tickets, and ticket printing and issuing machines. *List of transport companies and administrations*, pp. XX-XXVIII, includes railroads in the United States, while *Illustrations without company's name*, pp. XXVIII-XXIX, identifies tickets by names of issuers and countries, also including United States.

*Patterns of Power*, by L. K. Sillico, 1st vice-president, The New York Air Brake Co., Watertown, N. Y. 25 p. illus. Paper at Massachusetts Institute of Technology, March 17, 1948. "... Broadly speaking, there are six directions in which future development could take place; these are by an increase in (1) Speed, (2) power, (3) reliability, (4) availability, (5) the employment of new methods of construction and operation, and (6) thermal efficiency. ..."

*The Pennsylvania Railroad—A Pictorial History*, by Edwin P. Alexander. 148 p. Illus. New York, W. W. Norton & Co., Inc. \$6.00. End-papers reproduce old tickets and passes. "... The contents of this book constitute a summary of its history, rather than a full account—which would take volumes. Coupled with the many rare and hitherto unpublished reproductions of old prints and other pictorial matter, it presents a story of how the Pennsylvania Railroad grew into the world's greatest transportation system. ... p. 7.



*A Practical Evaluation of Railroad Motive Power*, by P. W. Kiefer, chief engineer, Motive Power and Rolling Stock, New York Central System. 65 p. Illus. and tables. New York, Steam Locomotive Research Institute, Inc. \$1.70. II. The Reciprocating Steam Locomotive. III. Other Coal-Fired Steam Locomotives. IV. The Gas-Turbine Locomotive. V. Electric Locomotives. VI. Diesel-Electric Locomotives. VII. Motive-Power Potentialities. VIII. Conclusion, includes Table 4. Relative Evaluations, p. 64.

*Railway Diesel Operation—Streamline Practice, Maintenance and Repair—Questions and Answers*, by Mark F. Herrick, locomotive engineer, C. & N. W. Ry., 1543 Second St., Boone, Iowa. 196 p. Illus. \$4.50. Prepared especially for engineers, firemen & maintenance men. At back, *Western district examination for Diesel*. 8 pp.

*Railway Mileage by States—December 31, 1946*, compiled by and available on request to Bureau of Railway Economics, Association of American Railroads, Transportation Building, Washington 6, D. C. Issued January 1948. "... classified as to the mileage operated in each of the several states" of Classes I, II, and III railroads and Switching and Terminal companies.

*Selected Papers and Addresses of Joseph B. Eastman, Director, Office of Defense Transportation, 1942-1944*. Edited by G. Lloyd Wilson, professor of Transportation and Public Utilities, University of Pennsylvania [for] Joseph B. Eastman Foundation, Amherst College, Amherst, Mass. 381 p. port. \$4.00. "The papers selected ... trace the development of the Office of Defense Transportation and of the transportation system under the tensions of World War II. The titles ... have in most cases, been supplied by the editor. In a few instances Mr. Eastman used a title and in such cases his titles have been used."

*A Brief History of the St. Louis Southwestern Railway Lines*, by Jacob E. Anderson, cover-title, 29 pp. incl. Illus, facsim., ports. Available on request to Public Relations Department, St. Louis Southwestern Railway—"Cotton Belt Route," 522 Cotton Belt Bldg., St. Louis 2, Missouri.

*The Trains We Loved*, by C. Hamilton Ellis. 196 pp. Illus., part in color. London, England, George Allen & Unwin Ltd. The Macmillan Co., 60 Fifth Ave., New York 11, N. Y. were able to import 100 copies, which it has for sale at \$3.38 per copy, plus postage. "... Much that should have been described has not been so; electric railways, I know, have had a very poor deal in this book, but my object has been to recapture the beauty and splendor of steam in the great days of its monopoly. Nothing else resembles, or can resemble, the steam railway train. It is still with us, and, for steam is a hardy agent subject to few ailments, it is likely to remain for long, ..." p. 175. *Locomotive and Rolling-Stock Liveries of the British Main-Line Railway Companies, 1914*, pp. 179-187. *Some Minor Railway Liveries*, pp. 187-188. *Pullman Car Liveries*, p. 189.



## ARTICLES IN PERIODICALS

*Annual Speed Survey*, by Donald M. Steffee. *Railroad Magazine*, April 1948, pp. 6-44. "... 1947 brought a twelve percent increase in mile-a-minuting on American railroads ..."

*The Development, Operation and Maintenance of A. A. R. Standard Couplers*, by Howard W. Gilbert, engineering assistant to president, National Malleable and Steel Castings Co., Cleveland, Ohio. Southern & Southwestern Railway Club, Atlanta, Ga., Proceedings, January 1948, pp. 13-29. "Development of the first standard coupler," p. 17.

*Don Quijote y el Ferrocarril—Imaginada Aventura del Immortal Caballero al Topar con el "Monstruo de Hierro,"* by Luis de la Fuente. Contribution to the 400th anniversary of Cervantes, and the 100th of Spanish railroads. Illustrations show Don Quijote's and Sancho Panza's reactions on seeing trains. *Ferrovios—Revista del Personal de la Red Nacional de los Ferrocarriles Españoles (RENFE)*, Madrid, Spain, October 1947, pp. 8-10.

*Ferrocarriles de Mexico—El Ultimo Riel* "... de la nueva vía ancha del Ferrocarril Interocéánico en su ruta México-Veracruz—Una Locomotora en 30 Días [reconstruction in Puebla shops]—El Primer Tren de Vía Ancha. Datos de R. Blancas J., Pavón, Tlaxcala.—*Lineas Ferreas de la Frontera Norte*, por el Prof. Miguel A. Quintana. *Ferrovios—La Revista de los Ferrocarrileros*, Mexico, D. F., 15 de enero de 1948, covers (in color), pp. 9-13, 15. Illustrations of ceremonies on December 21, 1947 when last rail in the standard-gauging of the Inter-oceanic Railway was laid, and reproduction of "Vista Panorámica de la 3/ Heroica Ciudad de Veraacruz en el Año de 1846" (p. 14).

*Houston . . . Transportation Center—Backed By An Area Rich in Raw Materials*. Houston, Texas, Magazine—Official Publication of Chamber of Commerce, Houston 1, Texas, November 1947. Includes "A brief history of those '18 railroads that meet the sea' quoting from S. G. Reed's *History of Texas Railroads*, with a series of articles on present day services and facilities of railroads, highways, tunnels, air services, and warehouses in Houston.

*Inauguración del Ferrocarril Cuenca-Utiel—S. E. El Jefe del Estado [General Franco] Realizo El Viaje En El Tren Inaugural—Se Ha Logrado La Comunicación Entre Madrid y Valencia En Siete Horas*. *Ferrovios—Revista del Personal del RENFE*, Madrid, Spain, November 1947, pp. 5-9. Maps, Profile, Illustrations. *Características de la sección Cuenca-Utiel*, p. 9, includes railroad distances between Madrid and coast cities of Santander, Bilbao, Barcelona, Cadiz, La Coruña, and Valencia.

*Indicateur CHAIX Mondial—The International Traveller's Guide—Rail—Air—Sea*, No. 1, January 1948. 380 p. Maps. Supplement dated January 15, 1948 contains: *Late Information [Time] Tables Revised During Printing*. 8 p. Paris, France, Librairie CHAIX. 300 francs per copy. To be published 5 times a year in French and in English, and will be available in bookstores all over the world. Tables show distances between places served by rail, air, river, and sea transportation, lengths of journeys, and frequencies of services, grouped by Europe and

Mediterranean Countries; Connections, Europe and Other Continents, and Outside Europe.

*The Life and Times of the Chicago and North Western. I—12.* North Western News Liner, Chicago 6, Illinois, January-December 1948. Twelve articles chronicling C & N W's first century of service. 1-3 in January, February, March issues had been published when this list was compiled.

*Model Railroading*, by Crawford E. Staples, designing engineer, Union Switch & Signal Co. "When I first looked up some facts about the history of model railroading, I was surprised to learn that it was not at all modern. Modeling of locomotives and cars followed closely the building of the prototypes. In some cases, the models came first . . . Baldwin might never have been in the locomotive business if he had not first built a model engine and car for the Philadelphia museum of Franklin Peale." Discusses development of model railroading as an industry and as a hobby, and use of model railroads for advertising purposes, design and demonstration and for instruction of trainmen.

*The Miniature Southern Pacific Railroad*. Illustrated. Brotherhood of Maintenance of Way Employees Journal, December 1947, pp. 8-10. "Vic Shattock Oakland, Calif., is a water service foreman on the Western Division of the Southern Pacific Company (Pacific Lines), . . . Miniature railroading has become a very popular hobby in our country and Vic can justly claim to be one of its foremost pioneers. He has built a complete railroad system in the basement of his home in Oakland, Calif., which is regarded by the thousands of visitors as the real thing. . . . it boasts five powerful steam locomotives, twenty-three cars and a host of other features which go to make up a modern pike. The railroad is built to the scale of 17/32" to the foot or approximately 1/24th full size. The track gauge is 2 1/2" . . ."

*National Planning of Internal Improvements*, by Carter Goodrich, Columbia University. Political Science Quarterly, March 1948, pp. 16-44. *A National Plan* [Albert Gallatin's report in 1808, as Secretary of the Treasury, in compliance with a Senate Resolution], pp. 18-28. *The Defeat of National Planning* [President Andrew Jackson's veto of Maysville Road Bill], pp. 28-36, with John Quincy Adams' comments. *The Alternatives to National Planning*, pp. 36-44.

*Railways of British North America*, by Terry Ferris. Ontario Historical Society Papers and Records, XXXVIII, Toronto, Canada, 1946, pp. 31-42. Reprinted by Lawson Memorial Library, University of Western Ontario, London, Ontario, 1947. pp. 31-42. ". . . the charter for the first railroad in British North America was granted in 1832. Construction of the Champlain and St. Lawrence Railroad was begun in 1835 and the line was opened in 1836, with the motive power being provided by horses. The road was first worked by locomotives in 1837 . . . The maritime province of Nova Scotia was not far behind Lower Canada in the introduction of steam locomotion in British North America. In 1836 a charter had been granted to the Albion Mines Railway of six miles running from Stellarton, Nova Scotia, to Pictou Harbour . . . (p. 32). The first railway actually constructed in Upper Canada was by the Erie and Ontario Company . . ." (pp. 33-34)

*The Railroad Diesel.* Diesel Power & Diesel Transportation—Monthly Golden Jubilee Number, March 1948, pp. 143-553. Copies may be purchased from office of this magazine, 192 Lexington Ave., New York 16, N. Y. 35 cents.

*Thirty-Five Years of Progress in Structural Steel Erection*, by C. W. Doerr, vice president, American Bridge Co., Pittsburgh, Pa. Railway Club of Pittsburgh Proceedings, February 1948, pp. 18-28. Lists a number of railroad bridges built by the company on p. 19.

*Ticknor and Fields' Publications in the Old Northwest, 1840-1860*, by W. S. Tryon. The Mississippi Valley Historical Review, March 1948, pp. 589-610. "... while Westerners were doing much to write their own books, publish their own books, and read their own books, sometimes to an extent truly phenomenal in so new a country, the great bulk of literary nourishment came from the eastern seaboard. . . . (p. 589). . . . In the Northwest the chief distributing centers soon became Cincinnati, Columbus, Cleveland, Toledo, Indianapolis, Chicago, and Milwaukee, and, just over the borders of the region, Louisville and St. Louis . . . (p. 591). The connection between publisher and bookseller was created and maintained by the rapidly developing network of railways without which any wide distribution of books to the Northwest or anywhere else from the three centers of publishing [Philadelphia, Boston, New York] would have proved unworkable. That the concentration in publishing, the urban, retail bookseller, and the railway, all appeared at the same time was not coincidence but the direct working of each upon the others. Nowhere was the distribution of eastern books more dependent on the railway than in the Northwest; at the same time, the railway, . . . spelled the doom of any major publishing center in the Northwest. . . . (p. 592). . . . Railway lines connected Boston with Buffalo in 1842. Ticknor and Fields' 'West' for the next half dozen years lay in upstate New York, where the volume of sales grew immediately . . . Rail lines from Toledo and Detroit to Chicago opened in 1852. . . . In 1853 Chicago, already connected with the East, was in direct rail traffic with St. Louis, and the Boston book trade sprang to life there as it had elsewhere . . ." (p. 598). Based on existing records of Ticknor & Fields, Boston, Mass. deposited in Houghton Library, Harvard University, by its successor company, Houghton Mifflin Co., Boston, Mass. "... This material consists of a dozen volumes of Cost Books, . . .; ten volumes of Letter Books, . . .; a variety of Journals and Commission Books; and four Ledgers. It is a unique and rich collection, . . ." (pp. 592-593).

## New Books

✓ **THE ROAD OF THE CENTURY**, by Alvin F. Harlow, 439 pages, 8x5¼, illustrated. Bound in cloth, Published by Creative Age Press, Inc., New York, N. Y. Price \$4.00.

This is the story of the New York Central System and the Vanderbilt family, the second volume in the series proposed by its publishers. To compress the history of such a large and extensive system, with all its ramifications and keep within the limits of this volume, the author has admirably succeeded.

As our membership knows, the New York Central had its beginning with the little Mohawk & Hudson R. R., connecting Albany with Schenectady, N. Y. The chain of railroads across New York state was welded into one railroad—the New York Central. Commodore Vanderbilt, in control of both the New York & Harlem and the Hudson River Railroads gains control of the N. Y. C. and the New York Central & Hudson River R. R. is born. Through the control of such roads as the "Lake Shore," the Michigan Central, the "Big Four" and the Pittsburgh & Lake Erie, the present system is rounded out with finally a reversion to its former name—New York Central System. It is the only road that has tracks into Manhattan without recourse to either crossing or going under the rivers. Through its Grand Central Terminal, 600 odd trains carry 178,000 passengers daily. It brings the food supply to the city and, from up-state New York, it brings in 40% of its milk and cream. New York handles nearly 50% of our export trade and one-quarter of this is handled by the New York Central over its piers and with its fleet of 300 vessels.

In writing the history of this road and its subsidiaries, the author has presented the facts as he has found them. There has been no attempt to cover up some of the scandals as found on the Lake Shore and "Big Four" prior to Vanderbilt control. We must remember—"other times, other manners" and what an individual at the head of a corporation or a group of directors could do seventy-five years ago is vastly different than now. There was a distinct sense of proprietorship then, perhaps too much of it. We surely need some of it now in some of our corporations. However, when the score is totalled and the balances are struck, take them by and large, the Vanderbilt family has always accepted its responsibilities squarely and seriously and they created a huge transportation system that has helped bring prosperity to this nation and to the communities it serves. The book is a well deserved tribute to this family and to this enterprise and the author is to be congratulated in presenting such an interesting and carefully written history, not only on the original road east of Buffalo but on those lines in the mid-west. None too much has appeared on these interesting carriers either prior to or during N. Y. C. control and it is a satisfaction to have all between two covers of one book. It is one that we will all welcome and the author has our sincere congratulations in producing such an interesting history.

**BOLL WEEVIL**—Recollections of the Trinity & Brazos Valley Ry., by J. L. Allhands, 326 pages, illustrated, 9½x6, bound in cloth. Published by the Anson Jones Press, Houston, Texas. Price \$3.50.

This is the second book by this author, the first being "Gringo Builders," that relates to the building of our railroads in the southwest and the hardships and difficulties encountered by their builders. This book, like the former, is a series of recollections of the experiences of a general contractor in the building of railroads that helped in the settlement of many of the now important cities of Texas. The author has a good memory for people and places and a gift for anecdotes concerning both the railroads and the allied business.

It was Col. E. M. House that proposed building a railroad that would commence at Waco, pass through Mexia and extend on up through central Texas. Since the initial venture called for a line between two principal rivers, the name Trinity and Brazos Valley Ry. was selected. On October 17, 1902 the corporation came into being. October 15, 1903 saw 26 miles of line completed between Hillsboro and Hubbard. Upon reaching Mexia, the Boston capitalists balked at paying out any more money and there construction ended for the time being. B. F. Yoakum, the T & P, the Rock Island, E. H. Harriman and the Burlington through James J. Hill, all influenced the destinies of this road and Texas. Now the road is jointly controlled by the Burlington-Rock Island Lines.

Perhaps the book should be called a pictorial scrap book for it combines the history and the folklore of the communities together with the derivations of their names, with the history of the railroad. The chapter devoted to the mule is a tribute to that animal that did so much drudgery and hard work and who is far more intelligent than many believe.

Reproductions of some of the railroad documents—Official List of Officers, Stations and Agents, August 1, 1907; Agreement between the road and its Trainmen dated Sept. 1, 1907; Schedule of Wages, Rules and Regulations governing Switchmen; Agreement between the Director General and the road dated January 23, 1919 and the settlement dated December 1, 1924 form a part of the appendix. For those interested in locomotives, a roster is included.

Whether you have ever been in Texas or not is unimportant. If you are interested in the history of our largest of states and one of the smaller carriers and the others that molded its career, you will find this book far from dull.

**THE PENNSYLVANIA RAILROAD—A Pictorial History.** By Edwin P. Alexander, 248 pages, 7½ x 10", 330 illustrations, bound in cloth. Published by W. W. Norton & Co., Inc., New York, N. Y. Price \$6.00.

As the majority of our members probably know, the Pennsylvania R. R. is one of the greatest transportation enterprises not only in this country but in the World. It may not be the largest from a mileage point of view, but, from the number of passengers carried and the number of tons of freight transported, it has held top honors for a number of years. It has always been wisely and prudently managed and the road has every reason to be proud of its record and achievements of its first one hundred years.

Mr. Alexander is well known for his writing on railroad subjects and is the author of **IRON HORSES** and **MODEL RAILROADS**. He

has spent some twenty years in acquiring the many items of Pennsylvania R. R. history upon which the present book is based.

In the text, the author briefly treats of the origin of the road, together with such roads as were later acquired such as the Camden & Amboy, Northern Central, Philadelphia & Erie, etc. Chapter II covers rail and track development, engineering achievements, bridges, tunnels, signals and safety devices. Chapter III includes stations, passenger equipment and famous passenger trains. Chapter IV includes freight service, shops and marine operations. Chapter V covers the Locomotives, Chapter VI the electrification and Chapter VII such incidents as the Pittsburgh riots, Johnstown flood, the Ohio floods and the Broad Street Station fire. To cover the various ramifications of this huge system for its hundred years of operation is no easy task. At best, only the more important ones could be mentioned and the author has made a wise choice in his selection. The text tells the story of the road's rise to greatness and the illustrations amply enlarge the text. These cover all possible phases of the road; maps, right of way, buildings and structures, bridges, tunnels, passenger and freight equipment AND locomotives. Some have appeared many times before, some are undoubtedly rare but there is no question that they have been wisely selected and they add to the value and interest of this volume.

Some of the errors in this book are probably the result of proof reading such as Gustav *Lidenthal*, the famous bridge engineer on page 52 and J. Edgar *Thompson* on page 161 for they are spelled correctly elsewhere. There are other errors that should be corrected in any future editions. For example, on page 27, while discussing the fact the Long Island R. R. was essentially built as part of a through route to Boston, the author overlooks the fact that the Norwich & Worcester R. R., was another route used on alternate days with the Stonington route and these two routes, in effect, gave daily service between New York and Boston.

On page 91, with respect to the sleeping cars between Philadelphia and Washington via the P. W. & B. and B & O Railroads. Two long passenger cars, according to the reports of the P. W. & B. R. R. were fitted up for this service in 1859 and placed in service. We know that Abraham Lincoln used one of them while enroute to his inauguration in 1861. There is nothing in the reports that mentions their discontinuance.

In the matter of locomotives, Mr. Alexander illustrates the Camden & Amboy R. R. "Monster" with the caption that it was built in 1834 and also illustrates this same locomotive as rebuilt by the road in 1869. With regards to the first illustration and the statements made by the author on page 157, your Editor can only point out that there were certain features on the original "Monster" that were a dozen years ahead of their time and did not appear until much later. However, this proves nothing but an inventory of the locomotives of the Camden & Amboy R. R. for 1850 fails to disclose any such locomotive. An inventory of the locomotives owned by this road, dated 1867, shows that road numbers 33-35 burned coal, had 18x30" cylinders, 48" drivers, weighed 66405 lbs. and had eight drivers. Nos. 33-34 were built by Vancleve & Co. (Trenton, N. J.) in 1852 and the No. 35 was built by the C & A R. R. the same year. The



print of the rebuilt "Monster" shows road No. 635 and, since all C & A locomotives had 600 added to their numbers when the P. R. R. assumed control, this places the "Monster" where it properly belongs.

On page 158 the statement is made that William Mason built his first locomotive in 1843. The Mason records show that his first locomotive was delivered October 11, 1853.

In the Locomotive Classification table given on page 168, the author has omitted two classes, Ca Anth and De, which may or may not be important. However, the Class L of 1881, which the author states was built for heavy express passenger service, in reality was built as an experiment for suburban service. The locomotive was of the 2-4-6T type, 17x24" cyl. 62" drivers, total weight 124100 lbs.

Page 173 contains a couple of errors. The first Pacific 4-6-2 type was delivered to the Pennsylvania Lines under their road No. 7067 by the American Locomotive Co., Pittsburgh Works, in 1907, Class K28. The locomotive the author has elected was originally built for the Vandalia by the American Locomotive Co., Schenectady Works, in 1910, Class VK1, reclassified by the P. R. R., K-21. The P. R. R. K-2 class was based upon the design of the K-28 engine built in 1907. In the matter of the K-3s class being "generally the same" as the K-2 class, there were these differences, which must have been in the minds, at least of those in the Operating Department, if not in the Mechanical Department. The K-2 had a 24x26" cylinder, the K-3s had a 26x26" cylinder. The K-2 weighed 278800 lbs. and developed 32600 lbs. T. E., while the K-3s weighed 302000 lbs. and developed 38282 lbs. T. E.

And on page 174, the records of the P. R. R. show the 80 E-6s engines were built at Juniata Shops in 1914, not in 1913.

For an overall appraisal of this work, the telling of the growth and development of a corporation of the size of the Pennsylvania R. R., over a span of a century is indeed difficult. Many facts and incidents that might have been included must be eliminated because of lack of space. The author has certainly selected the more important facts in the development of this great carrier and these, together with the lavish display of illustrations gives one a clearer view of the great changes and advancement in one of our foremost railroad systems. Anyone interested in this development or especially interested in the Pennsylvania R. R., will find this book well worth while.

**THE NICKEL PLATE ROAD**, by Taylor Hampton, 366 pages, 9¼x6, Illustrated, bound in cloth. Published by The World Publishing Co., 2231 West 110th Street, Cleveland (2), Ohio. Price \$3.75.

Here is an interesting story of one of our mid-western carriers. The author has very properly divided her book into four parts—the era of construction, the control by the New York Central and later by the Van Sweringen's and by Robert R. Young.

Nearly one half of the book is properly devoted to its history during the period of construction and up to the time of its control by the Vanderbilts. Incorporated in 1881, headed by George I. Seney, he with his associates completed the road in the following year. Jack and Dan

Casement, contractors of Union Pacific fame constructed the road between Cleveland and Buffalo. To all appearances the road was plentifully supplied with cash. Construction went on apace, motive power and rolling stock was plentifully supplied and the outlook appeared to be rosy. Of interest to all of us was the derivation of the sobriquet—Nickel Plate. Nickel plating was then much in vogue, from jewelry to harnesses and the bright shining steel rails, together with the new equipment with all its adornments, caused this appellation to be applied by the newspapers. It seems however, that F. R. Loomis, Editor of the Norwalk (Ohio) Chronicle, was the first to use this name. At any rate, after an investigation, Henry Monnett, G. P. A. of the road sent him complimentary pass No. 1 on October 17, 1882. What the coming of this road meant to these small communities in Ohio and Indiana has been brought out most carefully and interestingly by the author.

Whether the road was hastily and cheaply constructed, as claimed by William H. Vanderbilt, it paralleled his Lake Shore, it was shorter, it had certain physical advantages over his road and it was in a position to do him serious harm. Officially opened on October 23, 1882, the Seney Syndicate sold their interests on October 26th and finally, after much guessing in which Gould figured as a possible purchaser, it was finally disclosed that the New York Central was in control.

To conform with the Clayton Anti-Trust Act, the New York Central disposed of the road to the Van Swerigen interests on July 5th, 1916. These two brothers added the Clover Leaf (Toledo, St. Louis & Western) and the Lake Erie & Western roads to their control. The author has devoted a chapter to each of these roads that adds greatly to the book and to our knowledge of railroad history of the roads of the mid-west. The death of these two brothers brings the road into the Chesapeake & Ohio family and, as many of us know, that road recently distributed its interest to its stockholders, thus relinquishing its control of the Nickel Plate.

Throughout the entire history, the author has related this narrative in a straight-forward, interesting fashion. In addition to having access to the corporation records, she has consulted scores of newspaper files and interviewed many persons. Altho' there is an outline map of the present road within each of the covers, it would have been interesting if good maps could have been provided for the Clover Leaf and L. E. & W. roads.

Lastly, perhaps it is only fair to state that the author is the wife of H. H. Hampton, Vice President of Industrial Development of the Nickel Plate. To her we offer our congratulations in producing such an interesting and readable history of this mid-western carrier.

THE MODERN WONDER BOOK OF TRAINS AND RAILROADING, by Norman Carlisle, 289 pages, 9½ x 6½, illustrated. Bound in cloth. Published by The John C. Winston Co., Philadelphia, Pennsylvania. Price \$2.50.

The author in this book has attempted to cover the field of railroading in this country for the past century. There is enough about their history without being a burden to the reader. In turn, he devotes



a chapter to speed records and another to heroes of the rail. Rails, bridges and tunnels are treated in turn and these are followed by the steam locomotive and diesel power. The air brake, signalling, locomotive shops and terminals are all treated in turn and a chapter is also devoted to the war effort and the part the railroads played in World War II. The final chapter is devoted to model railroads and there is a glossary of railroad terms and slang. No railroad book seems complete without one these days.

To the younger generation this book should have a wide appeal and to many an "oldster" too! To the uninitiated, this book should serve to give the reader an intimate glimpse of behind the scenes in the railroad industry. The facts are well told and aptly described and the author has made good use of his knowledge in the selection of subjects that will have the widest appeal. Place this book in the hands of a boy and he should have a fair knowledge of the railroad industry.

CANADIAN RAILWAY DEVELOPMENT FROM THE EARLIEST TIMES, by Lt. Col. J. H. Edgar and Norman Thompson. Altho' this book was published in 1933 by the Mcmillin Co., Toronto, Canada, and was available for the centenary celebrations held in Montreal and vicinity in 1936, it may interest our members to learn that one of the authors has a number of copies for sale at \$2.00 per copy. The book covers nearly one hundred years of Canadian Railway history and is well worth a place in any railroad library. Copies may be procured from Lt. Col. J. H. Edgar, 576 Stradbrooke Ave., Winnipeg, Manitoba, Canada.

HISTORY OF TRANSPORTATION IN THE UNITED STATES BEFORE 1860, by Balthasar H. Meyer. Bound in cloth. Reprinted with the permission of the Carnegie Institution of Washington by Peter Smith, Publisher, 321 Fifth Ave., New York (16), N. Y. Price \$10.00.

At the request of the Out of Print Books Committee of the American Library Association, a limited number of these books have been printed. The book has been a well known authority for years, if you were fortunate enough to either own or be able to consult a copy. It is filled with facts and figures, it covers all forms of transportation in this country prior to 1860, railroads occupy about one-half of the text. The publication of the reprint of this valuable work is most timely and an opportunity is afforded to obtain a copy. It is a reference book that is well worth owning.

## ANNUAL MEETING

The Annual Meeting of this Society was held in the Hotel Bellevue, Beacon Street, Boston, Massachusetts, on May 2nd, 1948, with Messrs. Cole, Fisher, Fogg, Forsyth, Jacobs, MacDonald, Merrill and Parker from Boston; George P. Becker from Springfield and Messrs. Gaynor, Graves, Hungerford, Richardson, Schmid and Whitaker from New York and vicinity and D. W. Yungmeyer from Chicago, all present.

The reports of the officers as printed in the Annual Report, together with a revised statement submitted by Mr. Becker, were approved.

Mr. Hungerford requested the use of our locomotive "Jupiter" at the coming Chicago Fair and the consent of the Directors was readily given. Steps were taken to find a better "home" for both the "Jupiter" and the 952.

Mr. Merrill read an invitation from Mrs. Arthur Greenwood, whose property in Hudson, Massachusetts adjoins that of the old Central Massachusetts R. R., for the erection of a museum on her property. Mr. Merrill was instructed to look into the matter and report at the next meeting.

For his steady interest and his kindness and assistance in securing locomotive data, Mr. J. B. Ennis, formerly Senior Vice President of the American Locomotive Co., now retired, was elected an Honorary Member. For outstanding engineering achievement, Mr. William J. Wilgus was also elected an Honorary Member.

Mr. Merrill reported that on March 1st, our former quarters in the Baker Library were turned over to us and the work of restoration, under his direction, assisted by Malcolm Watkins, Walter Fogg and Jason Swadkins was underway. Following the meeting, the members visited the rooms and the general feeling and comment was that our Room Committee had already made good progress towards their restoration.

The following members were elected to serve as Directors of this Society for the ensuing year; George P. Becker, Dr. Arthur H. Cole, Charles E. Fisher, Walter R. Fogg, Edward Hungerford, Warren Jacobs, John W. Merrill, Robert C. Schmid, Harold S. Walker, Sidney Withington and Rogers E. M. Whitaker.

Immediately following the Annual Meeting, the directors elected the following to serve as officers until the next annual meeting: Charles E. Fisher, President; Sidney Withington, Vice President; Edward Hungerford, Vice President at Large, Warren Jacobs, Secretary; Harold S. Walker, Financial Secretary and George P. Becker, Treasurer.

The meeting adjourned at 3:30 P. M.

WARREN JACOBS, *Secretary*

May 5th, 1948.

## **In Memory Of**

**WILLIAM SUMNER APPLETON**

**Annual Member**

**141 Cambridge St., Boston, Massachusetts,  
who died on November 24th, 1947.**

**EDWARD G. ARNOLD**

**Annual Member**

**20 Hooper Lane, San Anselmo, California,  
who died on March 14th, 1948.**

**FRED P. HUSTON**

**Annual Member**

**P. O. Box 351, Fanwood, New Jersey,  
who died on December 29th, 1947.**

**LAMAR M. KELLEY**

**Life Member**

**1513 Moyer Ave., Elkhart, Indiana,  
who died on January 5th, 1948.**

**F. H. SIDNEY**

**Annual Member**

**Ayer Road, Harvard, Massachusetts,  
who died on September 7th, 1947.**

